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Technology and learning in the undergraduate classroom.

Brian L. Miller
University of Massachusetts Amherst

TECHNOLOGY AND LEARNING IN THE UNDERGRADUATE CLASSROOM

A Dissertation Presented

by

BRIAN L. MILLER

Submitted to the Graduate School of the
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School of Education

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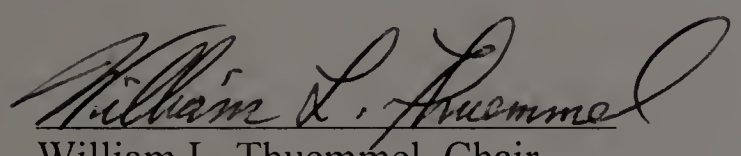
Approved as to style and content by:



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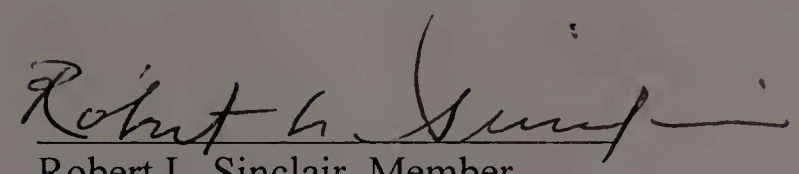

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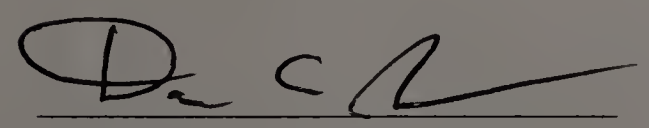
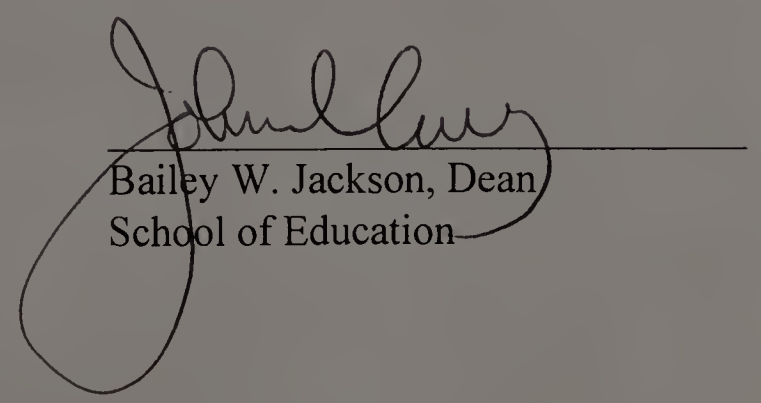


Damon A. Revelas, Member



Bailey W. Jackson, Dean
School of Education

DEDICATION

To my wife, Judith Fischer Miller, who provided encouragement, sternness, and love, ensuring the successful completion of this project. It is with her support and dedication to this goal that we are able to begin a new chapter in our lives. For this, I will always be indebted to her. Also, I am grateful for the love and kindness that Jillian Amber Miller has given me over the last two years, needed to complete this project. She has been my cheerleader, tormentor, and generally a great sport in understanding the mood swings displayed by her father. I love you both so very much.

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ABSTRACT

TECHNOLOGY AND LEARNING IN THE UNDERGRADUATE CLASSROOM

MAY 2001

BRIAN L. MILLER, B.A., UNIVERSITY OF SOUTH FLORIDA

M.S., UNIVERSITY OF MASSACHUSETTS AMHERST

Ed.D., UNIVERSITY OF MASSACHUSETTS AMHERST

Directed by: Professor William L. Thuemmel

Developing educational technologies in support of traditional face-to-face learning environments have the capacity to shift the undergraduate learning experience from a teacher-centered toward a student-centered model. In theory, shifting the learning paradigm of students revolving around the teacher toward one where the student becomes the center of the undergraduate experience may improve learner interest and achievement (Kinzie, Sullivan, & Berdel, 1988). In fact, in a 1957 study of this phenomenon, Newman concluded that student control of the learning experience resulted in a substantial advantage in students' learning (Newman, 1957). Therefore, when students take greater control of their learning experience it could be expected that their interest and motivation in the subject matter will improve.

Research by cognitive scientists provides evidence that differences among student learning are not so much attributed to variations in raw intelligence but rather are more likely related to variations in the student experience and acquaintance within the domain for which learning is desired (Phillips & Soltis, 1998). This suggests that learners would benefit from multiple appropriate opportunities to learn.

The current research begins an investigation to identify the effect of technology on undergraduate student learning, as well as on student attitude toward the learning experience when Internet (online) technology is added to a face-to-face pedagogical strategy in undergraduate survey course sections. Specifically, the researcher investigated the differences in learning between students taking the same introductory-level course taught with "face-to-face," "static dual mode," "dynamic dual mode," and "online" instructional delivery.

The findings of this research were that using technology in instruction of the course did have an effect on student achievement and attitudes toward instruction. First, students receiving instructional treatment in the dynamic dual instructional mode had significantly higher achievement scores than students in either traditional or static dual treatment modes. Furthermore, students receiving instruction in the dynamic dual mode had significantly greater positive attitudes toward the instruction received than students in either the traditional or static dual treatment groups. Finally, students receiving instruction in the flexible online mode showed similar outcomes in achievement and attitude as were found in the dynamic dual instructional group.

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INTRODUCTION

In many ways, the teaching process found in higher education today looks as it has since the beginning of recorded time. In fact, only minor shifts have occurred in this process. The evolution of higher education in America has experienced more changes in the curricula than in the methods of teaching (Fuhrmann & Grasha, 1994).

For example, beginning with ancient Greece, Socrates allegedly queried his students through a didactic dialogue. After presenting facts that were self-evident to him, Socrates led his students toward his conclusion through a series of questions. Similarly, in more recent times, colleges in colonial America taught students through a series of lectures by faculty after which students were required to recite the lecture verbatim for a passing grade (Rudolph, 1962; Brubacher & Rudy, 1997). At the beginning of the twenty-first century, teaching methods in public universities continue to a large extent to rely on lectures, given by "talking heads" in large auditoriums where students passively listen, then are expected to regurgitate specific facts and figures in the form of exams (Dede, 1997; McKeachie, 1980a). Common to all of these examples is that the teacher is at the center of the educational universe (Figure 1.1).

With the advent of computer technology and the widespread availability and acceptance of the Internet, faculty are beginning to challenge this age-old pedagogical paradigm. Developing educational technologies in support of traditional face-to-face learning environments appears to have the capacity to shift the undergraduate learning experience from a teacher-centered model toward a student-centered one.

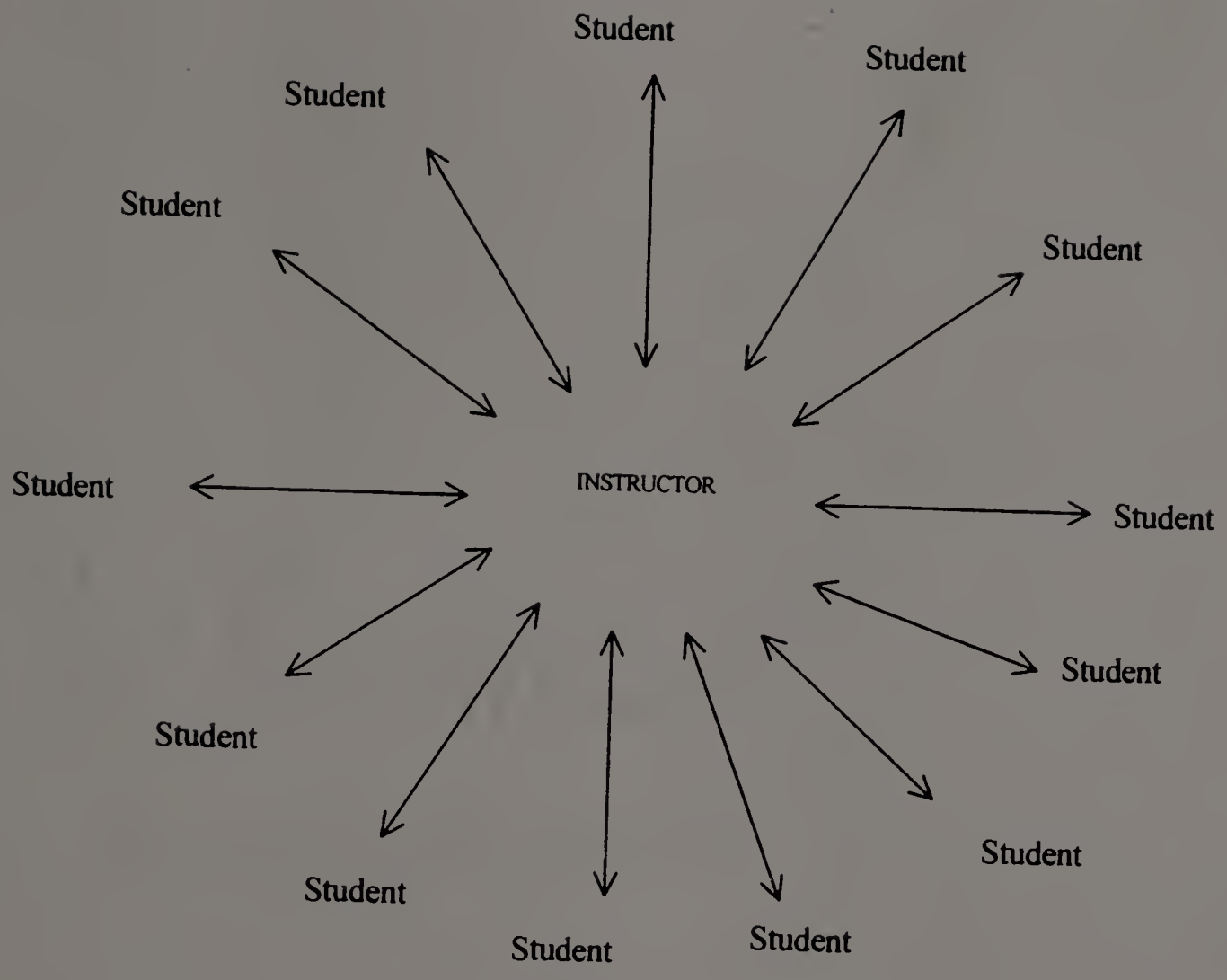

Figure 1.1: Instructor Centered Schematic Model

Educating students beyond the level of high school is a large and expensive undertaking, with its effects felt by a large portion of the population. In 1999, there were over 16 million students making the trek to campuses all over the United States (U.S. Department of Education, 1999); unfortunately approximately 50% fail to obtain a college degree within five years. Therefore, it is reasonable to believe that no one would wish to argue that understanding what happens in college classrooms is unimportant.

Statement of the Problem

This research is an exploratory investigation into the effect on the undergraduate experience when computerized technology is added to the pedagogical strategy of large undergraduate course sections. Its contribution to the research base begins to provide educators information toward a clearer understanding of the effect of increasing the use of technology to course instruction in a typical large undergraduate classroom.

In theory, shifting the learning paradigm of students revolving around the teacher toward one where the student becomes the center of the undergraduate experience should improve learner achievement and interest (Kinzie, Sullivan, & Berdel, 1988) (Figure 1.2). In fact, in a 1957 study of this phenomenon, Newman concluded that student control of the learning experience resulted in a substantial advantage in students' learning (Newman, 1957). Therefore, when students take greater control of their learning experience it could be expected that their interest and motivation in the subject matter will improve.

The academy appears to be searching for more student-centered approaches to undergraduate education. For example, universities are forging ahead to increase funding for instructional technology (Carr, 2000; Carnevale, 2000a). Independent departments as well as multi-institutional collaborations are being established with the function of creating virtual curricular opportunities for students (Carnevale, 2000b). As would be expected, the number of research reports studying the effect of computer-mediated instruction on the educational experience has steadily increased in the last five years (Phipps & Merisotis, 1999).

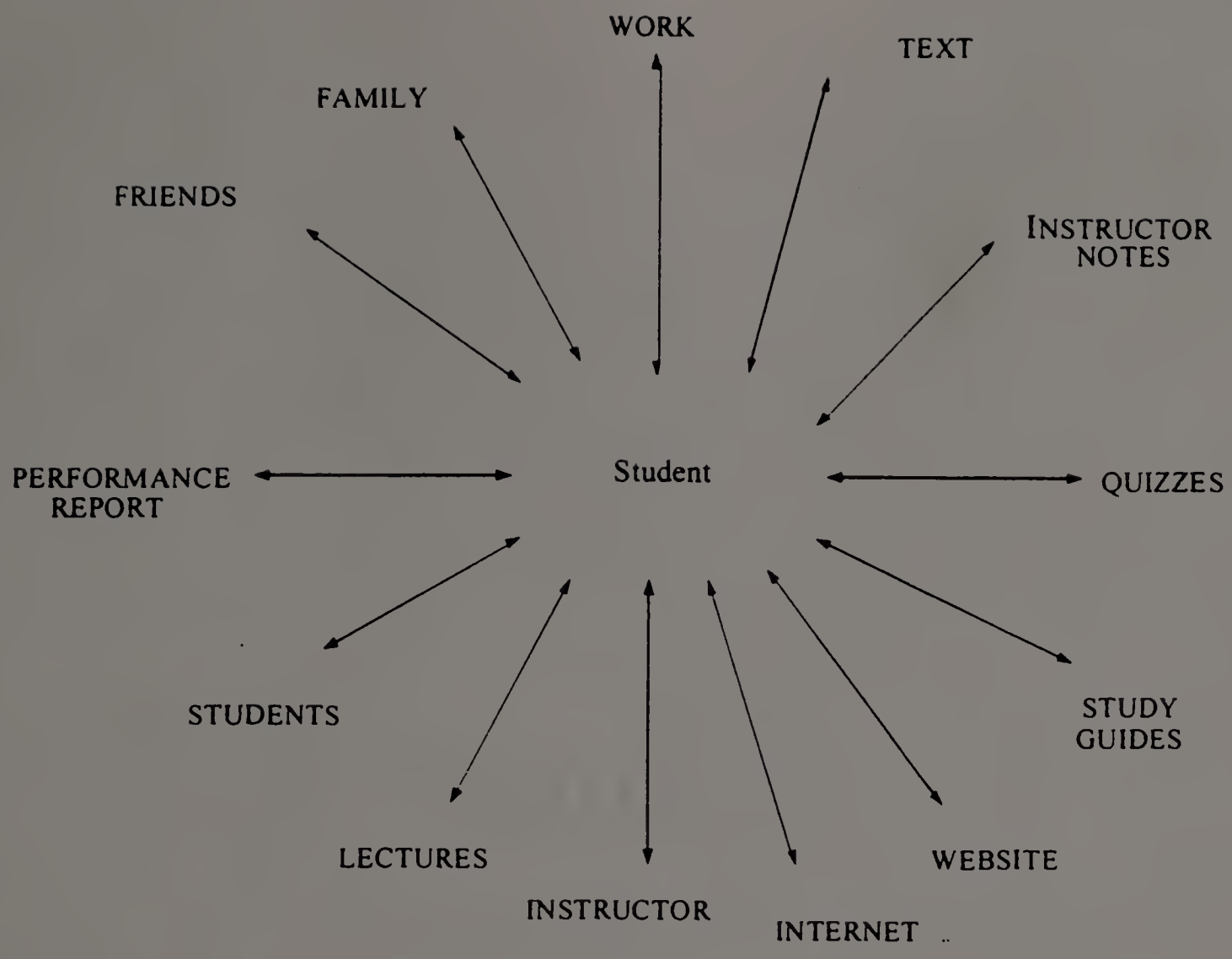

Figure 1.2: Student Centered Schematic Model

Learning is often described as a change in knowledge or behavior (Hamilton & Ghatala, 1994). Over time, our understanding and acceptance of theories on learning have changed. It is probable that even before Plato, philosophers and researchers searched for the magic pill that sparks learning in humans. Plato's solution to this problem was to describe learning as recalling into the consciousness information that had been forgotten. In other words, students could only learn when they had some prior knowledge or experience (Phillips & Soltis, 1998). In contrast, the behaviorists describe learning as conditioning students into a predictable behavior. These theorists believed that learners were guided by a given stimulus that resulted in a predictable response. To

evaluate learning objectively, the behaviorist developed experiments that could be viewed and verified by the researcher.

More contemporary researchers of student learning have identified two important aspects of the learning dilemma. First, as learners struggle with understanding new information, an individual's "cognitive apparatus" provides support for learning (Phillips & Soltis, 1998). Secondly, learning is usually not an isolated endeavor. As students learn, develop, or change, these individuals are a part of a larger social domain that is supporting the endeavor (Newman, Griffin, & Cole, 1989). Viewing learning in each of the preceding theorist's lens alone enlightens the picture but falls short of telling the complete story.

A more recent discovery by cognitive scientists describes evidence that differences among student learning are not attributed to variations in raw intelligence but rather are more likely related to variations in student experience and acquaintance within the domain for which learning is desired (Phillips & Soltis, 1998). This suggests that learners would benefit from a diversity of opportunities to learn. Similarly, Wilbert McKeachie (1980a) explains the challenge facing college instructors in the following passage:

> The effectiveness of student learning depends to some extent upon the strategy used by the student. Students often fail to choose the strategy that they can use most effectively and also fail to match their strategy to the learning task. This suggests two tasks for teachers: 1) teaching students to identify their own most effective learning strategies; and 2) teaching students how to use a larger repertoire of methods of learning. (p. 89)

Computer-mediated instructional tools that provide students with a greater diversity of learning strategies are readily available to college instructors. Generally, researchers have investigated the learning experience when using computer-mediated instruction in education at a distance. That is, when students and instructor are separated from the learning experience by time, space, or both. Moreover, researchers have measured the effectiveness of online distance education by student outcomes (scores or grades), student attitudes toward the experience, and student satisfaction with the course delivery. The research methodologies used to investigate computer-mediated distance education research have included descriptive, correlational, case study, and experimental research methods. Overall, the results of these reports have been mixed and a majority addressed only the learning experience of graduate students taking courses at a distance.

Theoretically, utilizing technology in the delivery of undergraduate courses can be illustrated through a continuum running between two extremes (Figure 1.3). On the one end, instructors do not use any online technology in the delivery of course content. All content is presented to the class in a traditional face-to-face delivery mode. At the other end, courses are conducted completely online without any face-to-face interaction between the instructor and students. Students proceed through the course at their own pace with limited facilitation from the instructor.

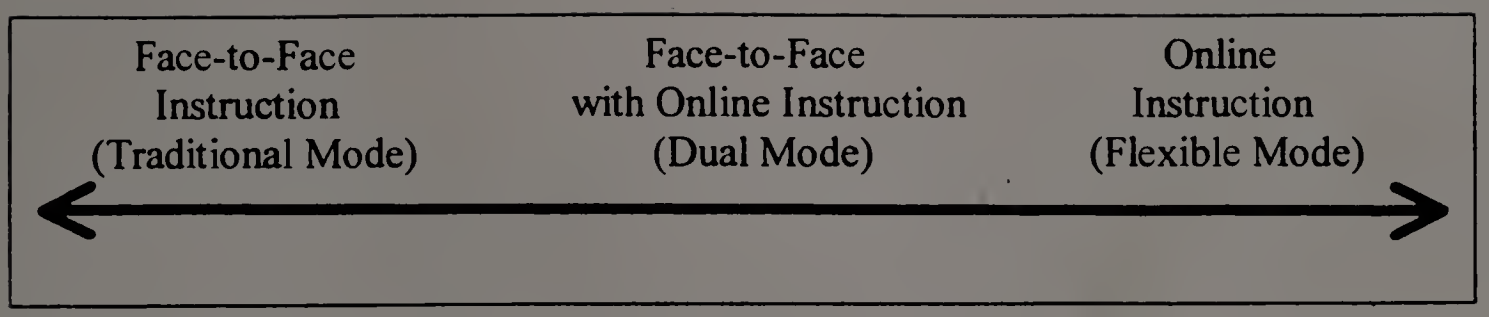

Figure 1.3: A Continuum of Utilizing "Web Enhanced" Instructional Technology in the Classroom

Along this continuum, one finds an increasing number of faculty adopting technology in support of their teaching by putting some part of their course on the World Wide Web. These efforts range from static materials, such as syllabi and course notes, to quizzes and other assessment tools, to asynchronous and synchronous bulletin boards for student-instructor and student-student interaction. Collectively, these pieces of widely available pedagogical tools are known as asynchronous learning networks (ALN). Specifically, ALNs, when used in conjunction of face-face instruction, are a collection of teaching and learning strategies that allow students to interact with course content during out-of-class time.

The pedagogical theory behind the use of ALNs is that students can spend out-of-class time accessing course information at their own pace. In essence, providing the learner with more control over their learning. Typically, the research conducted with ALNs has framed the problem around online learning where students are able to move

through the course content at their own speed. Unfortunately, too often, it seems that typical undergraduate-age students appear to lack the maturity, focus, and motivation to succeed when taking complete courses online utilizing the tools available in ALNs (Doherty, 1998; Phipps & Meriotis, 1999; Miller & Cohen, 2001; Freberg, 2000). It has been suggested that more research is needed to address the effectiveness of these instructional efforts on student achievement, student perceptions of the use of technology in ALNs, and the effect on student interest in course content when ALNs are used in conjunction with face-to-face classroom environments (Doherty, 1998).

It is important to note that many undergraduate instructors may use a variety of these tools in conjunction with face-to-face instruction. To date, there are few studies reported in the literature that have researched the significance of using the web to enhance student achievement or attitudes toward the instruction compared to traditional face-to-face instruction alone.

Supporting the use of technology, a significant and growing number of authors of contemporary studies have concluded that the use of distance education yields greater positive student achievement and interest when compared to traditionally taught courses (Hammond, 1997; Trinkle, 1999; Dutton, Dutton, & Perry, 1999; Russell, 2000). Yet in many cases these positive results were found among older graduate or non-resident learners. Furthermore, this body of research has also been criticized for not taking into consideration high dropout rates among resident undergraduate students enrolled in online courses (Phipps & Meriotis, 1999; Miller & Cohen 2001). Generally, it appears that older students are better served by online courses than their younger counterparts.

Therefore, this researcher hypothesized that using ALN technology in undergraduate course delivery to traditional-aged residential students in conjunction with face-to-face instruction would provide students with an instructional environment that has a greater positive impact on student outcomes when compared to learning environments that either do not incorporate this instructional technology or rely completely on online instruction without any face-to-face interaction with the instructor. Freberg (2000) concurs with this postulate when stating that the transition from receiving information passively with the lecture instructional method to learning independently with an online course instructional method is too abrupt for many students.

Hall (1996) described three broad teaching categories or models found in undergraduate classrooms. First, Hall describes a traditional classroom where students and instructor are found in the same room at the same time. In this face-to-face model, the instructor is the source of knowledge and authority. Students learn through a one-to-many instructional model. Second, Hall describes a "dual mode" teaching model. In this model, the components of asynchronous learning networks are added to the teaching strategy. Students are encouraged to engage with course content and given opportunities to participate in the course outside of the physical classroom. This model begins to change the role of the instructor and students. The instructor is no longer the only one with knowledge and students learn course concepts and principles through peer interaction, experts outside of the classroom, and individual inquiry. The instructor still maintains some control through the structuring of content and assessment. Finally, the last model described by Hall is a flexible delivery. In this model, students and

instructor are at a distance and never meet face-to-face. The instructor role moves to that of a facilitator of student progress through utilization of asynchronous learning tools and students gain more control and responsibility for their learning.

In a review of the literature regarding the use of the Internet for undergraduate instruction, Ruzic (2000) found that students were receiving it as part of their instruction in a variety of institutions and a variety of courses. She further found that the two most common uses of the Internet in instruction were to provide a platform for communication between students and the instructor and as a means for distributing information and course materials. She accurately notes that these uses of the Internet did not fundamentally change course instruction but instead only replaced or augmented another way of achieving the same end (p. 9). Using the Internet in this fashion is not core to the learning process and therefore did not change how learning was taking place in the classroom.

Price has suggested that using the Internet for course instruction is appropriate for personalizing the instruction to students (1999). He further purports that the use of the World Wide Web (Web) in course instruction falls into three categories. First, instructors may use the Web to support face-to-face instruction by using it as a tool to distribute class information. Price calls these Web-supported courses. This is accomplished through using the Web to distribute course materials that have been traditionally been distributed in paper form. Second, instructors use the Web to deliver some course instruction. In this case, the instructor requires students to engage in course materials through the Web in conjunction with face-to-face instruction. Price refers to this as Web-dependent courses. Generally, this may include posting assignments to the

website, taking online quizzes, and communicating with students through an online conference center, to name a few. Finally, instructors may utilize the Internet exclusively for course delivery, which he labels as Web-based courses.

Interpreting the above-mentioned theories and the common usages of the Internet by faculty, it is hypothesized that it is the face-to-face interaction between the student and instructor in conjunction with the use of technology, such as asynchronous learning network tools, that will be the mediating factor for higher student achievement and interest rather than using either instructional strategy alone. The current research investigated the differences in learning experiences of students taking a survey course taught in "traditional lecture mode," "static dual mode," "dynamic dual mode," and "flexible online delivery." Ruzic (2000) reports that the two most common usages for adding the Web to face-to-face instruction is as communication and a distribution tool, therefore not using the Web to address new ways for students to learn. To determine if posting a static web page with course material has any effect on student achievement or attitude toward instruction, the researcher added this to the theoretical framework presented by Hall.

Anyone who has ever experienced teaching in a large classroom environment becomes quickly aware that teaching a large class for 50 minutes three times a week is hard work. Creating and implementing an ALN in conjunction with face-to-face instruction could ameliorate this burden. Faculty will not likely expend effort into creating these learning networks for their students until there is evidence, supported through empirical research, that these activities have a positive effect on student outcomes.

When teaching in a large class, the size of the class is the most conspicuous obstacle; another formidable challenge is the diversity of students. Often students found in these introductory classes tend to be from departments all over the campus. The different skills, interests, abilities, and goals of each of the students represent the diversity of these students. At best, many students in large survey courses are searching to find a class on campus where there is an opportunity to learn new information, explore an alternative career opportunity, or receive a passing grade. At worst, students take these classes to fulfill graduation requirements, without any intention of taking further courses in the subject area and with the expectations that they lack scholarship (Wulff, Nyquist, & Abbott, 1987). As faculty charged with teaching undergraduates, long-term success of these survey-type courses should be measured by clearly stated student outcomes that are not compromised by the number of students enrolled.

Many publicly supported colleges and universities with growing student bodies are increasing the number of course offerings that are held in large auditoriums (Carbone, 1998; Geske, 1991; McKeachie, 1980a). Disadvantages to this type of learning environment are notorious (Gleason, 1986; Bauer & Snizek, 1989; McKeachie, 1980a; Carbone, 1998). For example, instructors find it difficult to adjust their material to accommodate the diversity of learning styles and to foster a cooperative environment. Students are swept into a void of anonymity, capable of going the entire semester without being acknowledged by the instructor (Gleason, 1986). This unfortunate circumstance is further aggravated through a lack of instructor insight into what students are hearing, processing, and retaining (Bauer & Snizek, 1989). Research is needed to guide practitioners in improving these difficult-to-teach situations. Instructors, using the

lessons drawn from the results of the research conducted in courses taught using technology, may begin to change student perceptions that class size has an inverse relationship with rigorous content and flexibility (Wulff et al., 1987).

In conclusion, the problem that the current research addresses is that the academy is being challenged to increase the use of technology in undergraduate instruction while decreasing face-to-face interaction and yet there is no clear consensus as to the benefits of this action on student learning. Simply put, it is not clear if increased use of technology in instruction for undergraduate students while simultaneously reducing face-to-face instructor contact will result in increased student learning. Additionally, what effect will this action have on student attitude toward the learning experience? This study centers on resolving this problem.

Purpose of the Study

The purpose of this study is to describe the dynamics of a large, introductory level course in a university when incorporating varying degrees of computer-mediated instructional technology into the course delivery. Specifically, the researcher analyzed student achievement and student attitudes toward the learning experience when employing inverse levels of face-to-face and online instruction. These two instructional outcomes were compared among the four instructional treatment groups used in the study.

The number of undergraduate courses that fall into the category of large has steadily increased over the last half century (Carbone, 1998). Conducting research in large introductory-type survey course sections is important and will provide educators

information for a better understanding of what it is like to be a student in these classes when course content is distributed in a traditional mode, static dual mode, dynamic dual mode, or flexible mode. The following three research hypotheses are posited:

R_1: Students receiving course instruction in a "traditional face-to-face mode," "static dual mode," "dynamic dual mode," or "online delivery mode" will have significantly different student achievement among the four groups.

R_2: Students receiving course instruction in "traditional face-to-face mode," "static dual mode," "dynamic dual mode," or "online delivery mode" will have significantly different attitudes toward the educational experience.

R_3: If the use of technology in instruction increases then the learning of students will increase.

Definition of the Terms

The following key terms are used in conducting the study and reporting the results of the research.

Face-to-face instruction (traditional). Instruction that occurs at a specific time and place. To receive the benefit of this instruction, students and instructor must be present at the scheduled time and location. For the present study, students received the content from the instructor during class meetings and from the textbook outside of class.

Dual instruction (hybrid). Instruction that utilizes technology tools that are widely available to instructors through the Internet in conjunction with face-to-face instruction. For the proposed research, these instructional tools were developed and accessed by students on a course website, adding an extra dimension to the face-to-face

teaching and learning process and providing students with more control and flexibility of access to course materials.

Static dual instruction (static hybrid). An instructional treatment used in this research to deliver course content to a group of students that was supported by a course website. This instruction used the Internet as a communication tool between students and the instructor and to distribute course information. This instructional treatment is considered to be dual instruction. Specifically, the researcher wanted to determine if merely having a website was enough to affect student achievement and attitudes toward the instruction. Therefore, the researcher put course materials on a course website that were static in nature. These included the syllabus, study guides, and practice quizzes (not for grade).

Dynamic dual instruction (dynamic hybrid). An instructional treatment used in this research to deliver course content to a group of students that was supported by a course website. This instruction went beyond using the Internet as a course communication tool. The website was used in conjunction with the face-to-face instruction as a part of the learning process. This instructional treatment is considered to be dual instruction. Specifically, the researcher wanted to determine if having a dynamic website had an affect on student achievement and attitudes toward the instruction. Therefore, one group of students received content material on the course website, which were dynamic in nature. These included an interactive syllabus, course content, PowerPoint presentations, study guides, graded quizzes, and student grades.

Online instruction (flexible). Provides students with the maximum amount of flexibility in their learning. Students are presented course content via the Internet, which

can be accessed at anytime and anywhere. The information presented in the course is not limited by physical and time constraints.

Large-class environments. Learning and teaching environments where there are over 100 students (Carbone, 1998).

Asynchronous learning networks. A learning network created by instructors to facilitate the learning of students. Generally, the instructor designs and implements the components of these networks and students control their interaction with the course content through the instruction and learning tools that are available. These learning networks can be used in conjunction with face-to-face instruction or alone in an online learning environment.

World Wide Web. A network of computers that can be accessed with a computer with a modem or direct cable link. In the present study, online course materials used in instruction were placed on a course Web page that students could access from anywhere in the world with a computer. The World Wide Web is often referred to as the Web or the Internet. This communication network continues to evolve and at the present the Web and the Internet are virtually the same.

Significance of the Study

Using technology in classroom instruction has the potential to significantly expand the breadth and depth of the curriculum. For example, with the Internet, students can access information far beyond the scope of their traditional textbooks. Curricula can be individualized and adapted to students' specific learning styles. Instructional

technology has the power to enhance overall knowledge accumulation, instead of just focusing on content mastery.

Moreover, instructional technology could significantly affect the role of teachers, as well as the structure of schools and classrooms. The use of instructional technology changes the teacher's role from expert to facilitator or coach. Additionally, instruction is no longer limited to the school building or classroom. For example, students can take courses from a global satellite feed or on the Internet. Learning can take place at home, at work, or anywhere else that has the capacity for a television, phone, or computer.

Finally, using instructional technology in large class environments allows the instructor to focus more and more on building feedback loops directly into the learning process. Students can obtain frequent and accurate feedback, make corrections to their work, and structure learning experiences around their individual needs. Additionally, instructors can monitor assessment with greater ease so that it can be ongoing, cumulative, and more useful to the student.

Very little research has been conducted to explain the student-teacher relationship in large lecture classes and its effect on student learning (Carbone, 1998). Many public universities must use large auditoriums to efficiently teach students and too often the emphases to improve outcomes of the university focus on teaching (Bowden & Marton, 1998). Typically when describing our educational postsecondary educational system we spotlight the learning of knowledge. It is the university where learning takes place. Regardless of the weight of specific missions (e.g., teaching, research, and service) found in many universities, each of these has learning at the core

of its effort (Bowden & Marton, 1998). For example, the outcome of teaching is learning for the individual student; the outcome of research is learning for society; and the outcome of service is learning for a specific community. Bowden and Marton (1998) argue that more attention should be directed toward understanding how the large undergraduate courses can positively impact student learning. Yet when attempting to improve learning, too often, we focus on teaching.

The analysis of the results of this research will be significant for both theoretical and practical implications. First, theoretically, conclusions from this research should shed a clearer light on the relationship between students' control of their learning and the impact it has on their outcomes in the course. When one chooses to come to a large public university to work on a bachelor's degree he/she assigns a portion of control over to the institution. In this situation, no student will have complete control over his or her learning. Therefore, research should be conducted to determine whether there is a relationship between student control and student outcomes in a large class environment.

Moreover, if there is a relationship between student control of the learning environment and learning outcomes, are there specific tools that might be utilized that have a positive impact on students' control of the learning environment? If so, then do these tools work independently or should the tools be packaged to yield the most effect on learning outcomes?

From a practical standpoint, this research is significant for informing instructors as to appropriate learning tools that can be utilized in a large survey class. Teaching large classes is demanding for both the instructor and student. Efforts expended in this relationship should tap into all tools that have a positive effect on student learning,

motivation, and interest. It appears safe to say that the use of large lecture halls for classrooms will continue to increase in the academy and faculty will need to change their teaching practices to effect student outcomes in a positive fashion.

Successful universities will be able to adapt to a changing world, a world that will require them to provide a flexible cadre of teaching methods. The appropriate teaching method employed should ultimately be chosen based on the circumstances of the learning environment such as learning objectives, outcomes, and student acceptance. Given the tremendous expectation that technology can improve student learning, the current research can provide us with a better understanding of its strengths and limitations.

Delimitations of the Study

The findings of this study are limited to a group of students who have chosen to take an introductory course in hospitality management in a large public supported university. Many of the students are taking the course as an initial requirement in obtaining a bachelor of science degree in hospitality management, although the sample will include students who have either chosen a different major or have yet to commit to a specific degree program.

The specific purpose of this research is to gain a better understanding of the experience of college students who are forced to take classes held in large auditoriums with faculty primarily using the lecture method for instruction. It is therefore reasonable to assume that the results could be generalized to a much larger population that would include other large survey-type courses offered in a variety of disciplines.

From the data collected, the author will draw conclusions as to whether students benefit from the use of ALNs in large-class environments. However, the researcher will not investigate if the use of these technology tools is applicable and useful in classes of other sizes. Moreover, the researcher will only use a small number of instructional strategies to effect student outcomes. Therefore, the interpretation of the results will be restricted to inferences from the use of specific instructional tools under the current circumstances.

Summary

In this chapter, the statement of the problem, the purpose of the study, and terms that are key to the understanding the purpose and results of the study were defined. The three research hypotheses that guided the study are as follows.

R_1: Students receiving course instruction in a "traditional face-to-face mode," "static dual mode," "dynamic dual mode," or "online delivery mode" will have significantly different student achievement among the four groups.

R_2: Students receiving course instruction in "traditional face-to-face mode," "static dual mode," "dynamic dual mode," or "online delivery mode" will have significantly different attitudes toward the educational experience.

R_3: If the use of technology in instruction increases then the learning of students will increase.

A review of the literature providing the theoretical foundation for this study and is presented in Chapter 2. The researcher focused on three main topics. First, a synthesis of research that has been conducted in large undergraduate classrooms is presented. Next, a review of computer-mediated research is presented, noting significant findings regarding student achievement and attitudes toward this method of instruction. The third topic reviewed is research on learning. The review included work conducted on classical, behavioral, and cognitive learning theories. In the final section of the chapter, a presentation of the rationale for the researcher's hypotheses, which is the conceptual framework that guided the study, is provided. The research design and data collection aspects of the study are described in Chapter 3. Included are a description of the participants involved, the instruments used, and how the data were analyzed. The findings of the study are presented in Chapter 4. Each research hypothesis has been restated in the null and after a careful analysis of the appropriate data a decision to either accept or reject the null hypothesis is provided. Finally, in Chapter 5, a summary of the findings is detailed and recommendations for future practice and research are presented.

CHAPTER 2

REVIEW OF THE LITERATURE

Overview

The conceptual foundation for the study is established through a review of research investigating student experiences in undergraduate classrooms, that is, face-to-face, hybrid instructional, and online flexible instructional settings. The literature reviewed is gathered from research reports of studies conducted in large undergraduate classrooms. These reports include undergraduate classrooms with traditional instruction involving face-to-face instructor-student interaction and virtual instruction that utilized a variety of components of asynchronous learning networks. Several reports compared the outcomes between these two instructional methods. A limited number of reports were found of the "hybrid" undergraduate classroom experience. Research about student learning is also reviewed.

The following section is a review of research conducted in large undergraduate classroom. Mediating factors that were found by researchers to have a positive or negative effect on student achievement are identified.

Research in Large Undergraduate Classrooms

The proliferation of students enrolling in undergraduate education has both positive and negative consequences on the educational process. Positive elements include more opportunities and choices for all students for academic exploration as well

as an increase in the diversity of both students and faculty on college and university campuses.

A negative outcome of this growth in the demand for undergraduate education has included, among others, larger classes, which have become havens for the professorate to use the lecture method for the delivery of the curriculum. This teacher-centered instructional method is considered efficient for the dissemination of knowledge but is flush with a variety of pitfalls, such as passive learning (McKeachie, 1969; Dede, 1997).

Research conducted in higher education addressing class size has been around for a long time. McKeachie (1980b) suggests that it was one of the first problems tackled by college teaching researchers (p. 24). Typically, research has focused on questions asked and observed by faculty teaching large classes or by researchers (Wulff, Nyquist, & Abbott, 1987). Questions explored in large classroom environments have focused on three broad issues—perceptions of students, perceptions of faculty, and the efficacy of teaching strategies in these environments.

First, many researchers have looked at the perceptions of participants of this type of classroom. This research, typically conducted through surveys at the end of instruction, has focused on student and faculty attitudes toward their experience in such an environment.

Student surveys of their large classroom experiences have yielded a wide range of perceptions as to when a class becomes a large class. In one series of research studies involving large classes with 800 student respondents, students identified large classes as one when enrollment reaches 25 students and larger (Wulff, Nyquist, & Abbott, 1987).

Sixty percent of students responded that classes become large when they reach between 75 and 150 students. Moreover, for lower level courses, some 41% of students actually preferred classes to have 100 or more students. Positive attributes that contributed to this finding were that students felt less pressure, a sense of independence, and the flexibility of skipping class without notice. Negative comments, gathered from students, included the impersonal nature of large classes, passivity of instruction, and noise and distractions from unruly students. All of these were mentioned as a hindrance to student learning (Wulff et al., 1987; McKeachie, 1980a; Richardson, 2000).

Student perceptions of the relevance and usefulness of content do not vary significantly from smaller classes (Wulff et al., 1987; McKeachie, 1980a; Geske, 1991). Although there is a general sense that content offered in large class settings is less detailed and strenuous (Wulff et al., 1987; Carbone, 1998; Richardson, 2000).

When addressing instructional dimensions, research from students' perspectives has pinned the success of large class courses on the skills of the instructor. This appears to be more so for larger classes than for smaller classes. Wulff, et al. (1987) suggest that students perceive large classes as successful when the instructor has experience with the content, a concern for students, high energy level, and good speaking skills (Carbone, 1998; Weaver & Contrell, 1987; Lowman, 1987; Geske, 1991).

A second issue addressed in the literature has been the perceptions of faculty who are charged with teaching large class sections. Carbone (1998), McKeachie (1980a), Aronson (1987), and others have all written about the perceptions of faculty teaching these classes. Faculty have conveyed their fears of intimidation, the need to be

organized, and the need to create a personal rapport with their students to be successful in large classes.

A third broad concern of research addressed effective teaching strategies. McKeachie (1980a) catalogued the results of research conducted in large classroom environments by 12 groups of researchers. His report included some 50 years of large classroom research covering the outcomes of three criteria (factual exams, higher level retention and synthesis, and affective factors). These research projects conducted in large classrooms have been quite extensive, covering some 1,240 classes. The results have been mixed. From the perspective of students, small and large classes have tended to be rated equally well (Levin, 1988; Maxwell & Lopus, 1995; Slavin, 1990). These results appear to lead one to the conception that teaching is a complex task (Wulff, Nyquist, & Abbott, 1987). But as McKeachie points out, the important judgment concerning the effectiveness of student learning in large classes is for educators to consider the implications of class size in reference to the educational goals of the course (p. 27). In other words, although large lecture classes have been shown to be effective, it is not appropriate for all courses.

For example, when comparing large and small classes on the results of factual exams, the results were mixed as to which method was more effective in yielding higher scores. When the criteria used were high retention levels and synthesis of content, small classes did better in 9 out of 11 classrooms. And finally, when researchers were measuring student and faculty affective and motivational outcomes, smaller classes, in all cases, showed greater positive attitude and motivation toward the course and subject matter (McKeachie, 1980a). In fact, in one report, a majority of students reported that

they were more likely to take an additional course in the discipline after taking a smaller class (Feldhusen, 1963).

Many efforts aimed at understanding effective teaching methods have tended to focus on discussion, lecturing, and personalized instruction. Atherton (1972) found no significant differences among the effectiveness of these teaching methods, but did suggest that teacher-student contact often provided the basis for more favorable learner outcomes. She further argued that the amount of instructor contact per student was directly related to student learning.

Although the results of research in large classroom environments have been mixed, it is clear that with certain educational goals, large classes are effective environments for students to learn. Unfortunately, in large classes, instructor efforts to change instructional methods to meet the needs of individual students will invariably leave some students unhappy with the class and its outcomes (Geske, 1991).

Undergraduate education should achieve educational goals that include higher-order thinking and synthesis of information, increase student motivation to learn, and leave students with a positive attitude toward the subject matter. It is clear that large class environments present challenges to both instructors who teach them and students who are required to fulfill their undergraduate curriculum in these settings.

Mediating Factors Improving or Inhibiting Student Achievement

In contrast to the above findings, several factors are described in the literature as providing a positive rationale for the use of large class environments. For example, large classes increase the resources available to students, such as the aggregate of

students' knowledge due to the large number of students. Moreover, reducing the number of course sections by adding more courses taught in large lecture auditoriums allows institutions to supply instructors with more expensive presentation equipment than would otherwise be available for multiple smaller sections. Finally, students have routinely reported that large classes increase the number of students that can assist them in their learning (Wulff, Nyquist, & Abbott, 1987). Other factors rated favorably by students of large classes included the low-pressure to perform in class, anonymity of the environment, and variable attendance policies.

Conversely a number of factors that inhibit student learning in large class environments have been identified. To begin with, the seating arrangements required in these classes places a physical distance between the instructor and students. Once students are more than 12 feet from the instructor, the interaction between the student and instructor will decrease (Geske, 1991). Another factor inhibiting student learning is the sheer number of students. With class sizes above 100 students, individual participation is difficult to accomplish.

Although instructors may want to solicit involvement from students, it would quickly become unmanageable if a large number of students chose to participate. And finally, assessing student performance in large class environments is difficult to adequately accomplish other than with multiple-choice exams where students are asked to memorize and regurgitate (Brooks, 1987; Dede, 1997). The published body of knowledge of large class research has provided the preceding characteristics of the undergraduate experience. In addition to original research, the vast majority of the

literature is filled with anecdotes of successful activities to maximize the enjoyment of teaching large classes.

In summation, from an institutional point of view, large classes do not appear to perform as well as small classes in increasing students' higher-order understanding of the subject matter or their motivation to continue studying a particular topic. When assessing the student achievement on factual exams there seem to be no differences between large and small classes. And finally it appears that students enjoy large classes because of the flexibility that it gives them to choose whether or not to participate.

Given the shortcomings noted in the research in large undergraduate classrooms, instructors teaching in these settings should be searching for ways to improve the experience for students. Using technology may be a viable way to stretch the classroom beyond the limitation of time and space and provide students greater control over their learning. The following is a review literature when using computer-mediated instruction in undergraduate courses.

Computer-Mediated Instruction

Now, the review will focus on research conducted in computer-mediated instructional environments. Reports considering student achievement are presented as well as those addressing student attitudes toward this instructional method.

Since 1993, Russell (1999) has been collecting and interpreting research reports conducted using online course delivery methods. In 1999, he published the book No Significant Difference. He concludes that after the review of over 300 reports student outcomes were not significantly different between those instructed at a distance and

from those in traditional face-to-face classes. In support of his thesis, that online education is an effective teaching method, Russell (2000) has posted a companion site to his 1999 book on the Internet that includes research reports where the outcomes of students in distance education courses were significantly better than students taught with traditional methods. Therefore, in addition to providing a valid educational experience, many research reports of online courses have cited additional positive student outcomes (Gaud, 1999; Russell 2000).

Students have reported that assignments requiring the use of the Internet add both breadth and depth to the course (Dutton, Dutton, & Perry, 1999; Gaud, 1999; Freberg, 2000). Moreover, the use of these additional resources often provides students with a fuller understanding of, and clearer relevance to, the topic area (Gaud, 1999).

Distance learning is not a new activity for undergraduate institutions. Undergraduate courses offered at a distance began as mail correspondence courses in the 1800s. In the 1900s, with the development of audio and visual technology, distance courses included audio and videocassettes, as well as, more recently, two-way audio and video. In all cases, the demand for these undergraduate courses were from students that were too far from the university to take courses face-to-face. Since 1988, the use of computers in distance education has expanded. In 1997-1999, there were over 1,661,000 students enrolled in distance courses that utilized computers, which is twice the amount reported in 1994-1995 (U.S. Department of Education, 1997; U.S. Department of Education, 1999). The popularity of demand for online courses is driven by the flexibility that these courses offer students. A growing number of students taking undergraduate courses are working part-time to meet financial and family obligations.

For example, one researcher, reviewing current educational statistics, suggests that "residential students between the ages of 18 and 22 account for only about one-fifth of the nation's 14 million college students" (Penney, 1997, p. 28).

Generally, researchers have measured the effectiveness of online distance education by student outcomes (scores or grades), student attitudes toward the experience, and student satisfaction with the course delivery. The research methodology employed to conduct computer-mediated distance education research has included descriptive, correlational, case study, and experimental research methods.

Student Achievement in Computer-Mediated Instruction

Overall, a vast majority of research reports have found that the instructional format itself has little effect on student achievement as long as the students have access to the technology and that the technology used is appropriate for the content (Clark, 1983; Russell, 1999). For example, delivering public speaking courses through a computer conferencing format is probably not appropriate.

Souder (1993) compared the effectiveness of traditional and satellite administered distance instruction in three graduate degree programs and reported that tests, administered by a variety of course instructors, were scored higher by distance students with no significant differences in attitude between the two types of instruction delivery. Moreover, researchers have reported that students taking distance courses through television transmission perceived their instructors as being better organized and as presenting course content clearer than their non-distance course instructors (Egan, Welch, Page, & Sebastian, 1992).

Other results from various reports have indicated that older students tend to do well in courses offered at a distance (Marsh & Wells, 1996; Schutte, 1997). When measuring student achievement, several comparisons between graduate students reported that students who received parallel computer-mediated instruction significantly outperformed students from face-to-face lecture instruction (Dutton et al., 1999; Navarro & Shoemaker, 1999). Similarly, in classes using the case study method of instruction, groups of students who met to discuss cases using computer groupware outperformed student groups who met in face-to-face meetings. In comparing student achievement across institutions, Gubernick and Ebeling (1997) reported that graduate students taking courses online outscored students in face-to-face courses by 5% to 10% on standardized achievement tests across three competing public universities in Arizona. In agreement, Morrissey (1998) found, while comparing the results of six studies conducted in graduate level business school classes, online students consistently showed improved performance when compared to students receiving face-to-face instruction.

Conversely, Cheng, Lehman, and Armstrong (1991) found no significant difference in student achievement and attitudes toward the subject matter in a research project that compared college students enrolled in traditional and computer conferencing classrooms. Likewise, Clarke (1999) found no differences when comparing test scores between students whose only difference was the method of instruction.

Schutte (1997) conducted research of distance learning environments among two randomly assigned treatment groups. His findings were that those students in the online

treatment scored on average about 20% higher than students receiving the traditional instruction treatment. Although, in further analysis, he suggests that in both groups, higher student scores on his achievement measures were more related to student-to-student collaboration as opposed to the technology by itself. In both groups, the highest performing students also reported the most peer interaction (p. 3).

Students' Attitude Toward Computer-Mediated Instruction

In a study, conducted in a community college environment, the researcher found that students were more likely to participate in online discussions than would be expected in face-to-face class meetings, which resulted in a more positive attitude toward the online instruction delivery (Althaus, 1998). Two studies, Kubala (1998) and Townley (1997), reported similar results from online class sections that students enjoyed the anonymity of virtual class discussion, which served as a motivator for students to get involved. Additionally, students remarked that these courses were user-friendly and were appropriate in rigor. In the Townley study (1997), males were significantly more likely than females to indicate that they would take another online course and females reported that online courses entailed much more student-to-student interaction than a traditional face-to-face course delivery.

Using Internet instructional tools can lead to improved student motivation. According to his student informants, Plant (1998) reported that Internet-based activities were the most valuable offerings of their courses, which led to significantly more student interest and motivation than was found in traditional delivery modes that did not incorporate Internet-based instructional activities.

In the same way, John Enochs (1994) noted that interactive, real-time, and similar online activities have great potential for course instruction. In research that sought to provide insight into the question, "Is it possible to have the flexibility and responsiveness of online instruction and still meet students' learning expectations?" He concluded that the answer to this question was yes, since students responded positively in satisfaction with no negative responses.

Anytime and anywhere access also appears to affect proficiency and positive perceptions of the Internet for educational use. In her description of Internet use by Ohio State University extension educators, Porter's (1997) data showed significant and substantial positive perceptions of the value of Internet-based learning by both extension educators and participants in their outreach training programs. Similar positive attitudes toward online learning environments were reported by Baker (1996) who studied the attitudes of college students toward using online services (e.g., e-mail, shopping, school information) and found that as the ease of access increased, students' positive attitude toward using this medium increased in a linear fashion. Baker showed that access factors and current levels of online usage were significant predictors, along with income, of attitudes toward using online services.

Using the World Wide Web (Web) in traditional instruction was reported as having met with success in another 1996 study. Tina Day (1996) looked at the Web for course instruction and found that traditional courses, which utilized instructional tools that were Web dependent, displayed significantly higher group means on student achievement and attitude toward instruction than courses that did not utilize the Web instructional tools. Furthermore, compared interaction effects between the use of Web

instruction and student learning styles resulted in no significant effect. In other words, students with differing learning styles were likely to receive benefit from instruction that included Web dependent instruction.

Student Satisfaction with Computer-Mediated Instruction

Navarro and Shoemaker (1999) found in their research that online instruction was as effective as traditional instructional methods, with no significant differences among instructional methods, yet found that, given a choice of learning options, there were significant differences between what they called traditional learners and cyber learners. These authors reported that traditional learners believed that face-to-face instruction led to more student-students and student-instructor interaction, greater opportunity to ask questions, received more information, were kept more focused, and is a more interesting way to receive course content.

Conversely, cyber learners chose online learning because of its convenience and flexibility, self-pacing, and repeated access to high quality CD-lectures. Moreover, when asked how much did they learn in the course, 90% of cyber learners reported that they learned more in the online course than they would have in a traditional instruction format (Navarro & Shoemaker, 1999, p. 48).

To summarize the findings in the preceding review, it appears that student achievement in distance education courses is just as good as that of more traditional formats. Moreover, students appear to appreciate the flexibility and convenience of taking courses that are not time-dependent or place-dependent. Yet, in general,

undergraduate students seem to prefer the traditional classroom (Schlosser & Anderson, 1994).

The Hybrid Classroom

In this section, a review of research conducted in hybrid classrooms is presented. A hybrid classroom includes both traditional face-to-face instruction as well as an online learning environment (Hall, 1996). A discussion regarding the elements of asynchronous learning environments and its effect on student learning and attitudes will follow this review. Differences among hybrid learners are noted as well.

As mentioned earlier, Hall (1996) describes the use of technology in education as falling into three modes. These modes are discrete forms of teaching that are clearly using differing amounts of face-to-face interaction and computer technology. The first mode, traditional lecture, does not utilize any online technology outside of the classroom. The second mode, a hybrid, uses a combination of face-to-face instruction and online technology to deliver course content and activities. The combination between face-to-face interaction and online instruction are roughly equal. The third mode, flexible, provides a large amount of responsibility to rest with the student in accessing the content of the course. These courses are not devoid of instructor-student interaction yet allowed students to access course content and to interact with instructor or students at anytime and anywhere.

Hall's instructional modes fall short of describing the varying nuances of using the Internet for instructional purposes. Both Ruzic (2000) and Price (1999) do a better job describing the varying degrees that the Web is being used to augment and support

undergraduate course management and student learning. It seems that using the Web solely as a tool for communicating between students and the instructor would have a different effect on student achievement and their attitude toward instruction than would be expected when using the Web as a component of course instruction that fundamentally changes what is taking place in the classroom. In other words, when evaluating instructors' use of the Internet in the delivery of course content, one can and will find a wide variance of strategies for its implementation, which may not be altering the core of the learning process more than would be found in face-to-face instruction alone. Merely creating a course website to provide students access to course materials may or may not have a significant effect on student learning or their attitudes toward the instruction.

The number of tools available to instructors that can be made available to students is increasing. Recently instructors have used the Internet to provide access for students to these tools. Using these tools effectively requires that faculty consider the potential benefits of these tools on improving student learning. Freberg (2000) suggests that frequently technology is added to the classroom for its own sake without careful consideration for student outcomes (p. 48). Freberg contends that by addressing those student outcomes desired by the instructor results in better decisions that will ultimately provide for better use of faculty time. That is, more time for teaching students.

Benefits of using the Internet for classroom instruction include—increased access to course materials, introduction of real-world examples, provision of timely information, communication with experts, provision for independent learning and exploration, and achievement of critical thinking skills (Freberg, 2000). Instructor

interpretation and delivery of course material has always relied on courseware materials, such as textbooks and ancillary support from publishers. Today, more instructional materials are becoming available to instructors that add value to face-to-face instruction through the use of the Internet.

The notion of hybrid courses, those courses that utilize the latest technology deemed appropriate for educational purposes, is not a novel occurrence, according to Gilbert (2001). He suggests that, historically, as technology has been introduced into education there are those who are extreme proponents for its adoption because of the positive outcomes from its use as well as those supporters who claim that its use will lead to the destruction of the status quo. He further argues that within a few years, the new technology does neither, yet the new educational technology quietly makes a large impact on some disciplines and little difference in others (p.16). In his summation, Gilbert asserts:

> The best educational options are "hybrids"—combinations of different, media, tools, and pedagogies. And the best hybrids are those combinations that are tuned by one or more dedicated professional teachers who have the time to make modifications based on careful examination of the progress of different kinds of learners (p.16).

Asynchronous Learning Networks

Asynchronous Learning Networks (ALN) are people networks for anytime-anywhere learning. ALN combines self-study with substantial, rapid, and asynchronous interactivity with others. With ALN, learners use computer and communications technologies to work with remote learning resources, including coaches and other

learners, but without the requirement to be online at the same time. The most common ALN communication tool is the World Wide Web (Mayadas, 1997).

By this definition, a web-based university class that requires frequent online conferencing and collaboration with others is an asynchronous learning network. ALN can also encompass a proctored examination at a specified time and place, or occasional synchronous chat or lab sessions for near-campus learners, or an in-person kickoff meeting (Mayadas, 1997).

It should be noted that asynchronous learning networks are different from distance education, which is based primarily on a synchronous audio or video presentation or conference and cannot be considered an ALN because these require learners and instructors to be available at the same time (Mayadas, 1997). A videotaped course or mail-based correspondence course or computer-based training is not ALN because these do not include substantial and rapid interactivity with others, even though the learner might mail in a paper or test and receive a reply days later (Mayadas, 1997).

The term "asynchronous learning network" or "ALN" had its genesis in 1993-94, jump-started by the Alfred P. Sloan Foundation's program in "Learning Outside the Classroom" (LOC). The central theme of the LOC program is the use of current, affordable technology to achieve new outcomes through asynchronous or "on demand" access to remote learning opportunities and resources (Mayadas, 1997).

Frank Mayadas may have authored the seminal work on ALNs when he assigned the term "asynchronous learning network" to a tele-learning infrastructure in which learners access resources and interact asynchronously. He described the ALN model as one that facilitates connections between people, between learners and other learners, and

between learners and faculty. Moreover, the key elements of ALN technology--computers, networks, telecommunications, groupware, and the World Wide Web link people to other people and are providing a framework for learning asynchronously.

The Alfred P. Sloan Foundation embraced this new learning paradigm and committed to move ALNs into a "production mode" as soon as possible (Mayadas, 1997). To do this, the Sloan Foundation has provided millions of dollars in funding to more than 30 universities and community colleges to explore ALN and related outcomes.

In 1995, Andriole (1995) reported on Drexel University's early experience with ALNs (1995). Student reactions were extremely positive:

- 90% felt they had more access to the instructor than in "conventional" course delivery.
- 85% would take another ALN course.
- 80% did not miss class lectures.
- 75% felt they had more communication with fellow students than in conventional courses.
- 75% felt they learned more in the ALN-based course than they expected to learn in a conventional course.

Andriole concluded that an individual, self-paced learning model in an "open" environment is a powerful learning medium.

Similarly, Rosenberg (1995) found the connection between learning networks and the re-engineering of education. He challenged educators to change the balance between conventional pedagogies and technology; refocusing instructional strategies

upon active learning, team problem-solving, and authentic simulations in a technology-enhanced environment. He echoed the call for asynchronous learning networks.

This growing interest in and emphasis upon using technology caught the eye of educational researchers. A research review of educational electronic networks by Levin and Thurston (1996) provided support for the belief espoused by Harasim, Hiltz, Teles, and Turoff (1995) that tele-communicated learning has the potential to change the nature of teaching and learning. ALNs provide a new learning methodology based on participation. The innovative kinds of pedagogy empowered by these emerging technologies engender a transformation of conventional education into an alternative instructional paradigm (Dede, 1996). The asynchronous nature of anytime-anywhere interactions among and between learners and instructor lead to new paradigms for teaching and learning. The power of ALNs provides a platform for a collaborative learning strategy in which students become teachers (Hiltz & Wellman, 1997).

By 1997, the term "asynchronous learning network" had, indeed, become part of the vernacular. Juge, Hartman, Sorg and Truman (1997) wrote, "web-based learning systems have become known as asynchronous learning networks, or ALNs" (p. 3). The authors went on to observe that the World Wide Web had become the delivery platform of choice, due to its multimedia, hypertext capability, and its ubiquity.

Perhaps the most overt references to the connection between learner control and asynchronous learning networks have been espoused by Odin (1997) by acknowledging that learner control is one of the "advantages" of an ALN environment, together with collaborative learning and active learning.

In essence, ALNs have the potential to fulfill Wydra's (1980) vision for learner-controlled instruction. Wydra (1980) identified three requirements for the successful use of the learner-centered model: provide a variety of content and information resources, have a clear statement of the learning objectives, and make available adequate tools to measure the acquisition of knowledge or skill. "The learner needs to know where he or she is going, a means to get there, and a way to know when he or she has arrived" (p.16).

Combining the power afforded by the tools found in ALNs with the support and guidance of face-to-face instruction could provide a complete learning environment for traditional undergraduate students that are significantly better than either of them alone. Jeffrey Plant reported an example of the power of using ALN tools in a 1997 dissertation. In his survey, completed by 18 university vocational programs, 94% of the faculty reported using Internet technology to support interaction and learning in face-to-face course delivery.

Differences Among Hybrid Learners

In 1997, Blocher examined students' interaction and engagement in computer-mediated instruction with regard to motivation, and to cognitive and metacognitive strategies. In this study, he measured class communication through e-mail, listserv distribution, and bulletin boards in conjunction with traditional instruction and found that when communicating in an online environment there are differences between how men and women communicate when compared with a face-to-face learning treatment. For example, women tended to be less engaged when communicating in a virtual

environment as compared to both men in similar situations, as well as women in face-to-face environments. This finding has important implications suggesting that men and women may differ in student learning and attitude when switching from face-to-face to an online environment.

Research on Learning

Learning theorists attempt to understand and explain how people learn. This section provides an overview of several theoretical perspectives relating to how people acquire knowledge. The following is a review of the literature concerned with the research on how students learn. Following this review, viewpoints of classical, behavioral, and cognitive learning theory are presented.

Understanding how learning takes place is difficult because it is such a complex problem. Theorists do not all agree on what learning is or how students learn. Since the late 1800s many researchers, who have studied questions regarding learning have come from the broad field of psychology. Cumulatively, these researchers have created a large body of knowledge that is filled with theories of how the mind works and how students learn. In this section, a brief summary of three learning theories will be presented.

Learning Situations

To illustrate the challenges facing educators, think about creating learning opportunities for the following four common, yet distinct, learning situations. First, what type of instructional strategies would be helpful in changing a person's eating behavior and attitude toward nutrition? To successfully change eating habits and

become more aware of nutritional alternatives would likely require the learner to change his/her attitudes toward healthy eating. The primary learning objective is a change in attitude about food, nutrition, and health. Second, what strategies would be successful to help someone learn a foreign language? When learning a foreign language a learner must memorize the meanings of new words as well as the grammatical rules that support the language. Successful learning would be demonstrated through memorization of grammatical rules and new words. A third example is to improve golfing skills. Golf is a game that requires one to practice new skills. Increasing the proficiency of the golf swing requires the learner to practice this complex skill. The improved score of one's golf game demonstrates student success in learning. A final example is to learn the economic principle of inelasticity. In this situation, learning the concept of elasticity of goods would require the learner to develop an understanding of the properties of such a phenomenon, which would obviously be more difficult than rote memorization. In each of these learning situations, the teaching strategy would likely be different. An additional factor of success would also entail the learning strategies of the learner. Each of the following learning theories explored in this section attempts to describe how and why learning occurs.

Classical Learning Theory

The study of learning grew out of philosophy and was heavily influenced by the discipline of psychology. Early learning theorists explained learning as teachers helping the learner to understand information that they already had. A recurring question that has bemused this line of reasoning is how did the learner gain the original knowledge?

John Locke explained that learning begins at birth, at which time we are born with a clean and empty slate. As we grow, we collect experiences from our environment through our senses and have the ability to store these experiences in our memory. As we continue to grow, we build on the information from our memory of our past experiences. Although plausible and inductive, this theory falls short of explaining how to improve student learning.

Behaviorists

Behaviorism arose in the early twentieth century and focused on learning that occurred on the conscious level. Behaviorist theorists strove to make the body of knowledge of learning more objective. Behaviorists had a negative view of the then traditional mode of data collection, learners' introspection—the self-reporting of one's own thoughts, as unscientific. Through the variety of famous experiments conducted by well-known theorists, generally involving animals, learning was described as a conditioning of learners into predictable behaviors.

Behaviorist theories of learning seek scientific, demonstrable explanations for simple behaviors. For these reasons, and since humans are considered to resemble machines, behaviorist explanations tend to be somewhat mechanical in nature. "They make use of one or both of two principal classes of explanations for learning: those based on contiguity (simultaneity of stimulus and response events) and those based on the effects of behavior (reinforcement and punishment)" (Lefrancois, 1988, p. 29).

Several principles from behaviorist theory can help to explain their view of how students learn.

- Successful learning is likely to occur when instruction provides for:
    - repetition
    - small, concrete, progressively sequenced tasks
    - positive and negative reinforcement
    - consistency in the use of re-enforcers during the teaching-learning process
- Habits and other undesirable responses can be broken by removing the positive re-enforcers connected with them.
- Immediate, consistent, and positive reinforcement increases the speed of learning.
- Once an item is learned, intermittent reinforcement will promote retention.

For many years, these concepts from behavioral theory formed the basis of most of the learning theory applied in classrooms. Teachers still find that, in many instances, individuals do learn when provided with the appropriate blend of stimuli, rewards, negative reinforcement, and punishments. This appears to be especially true with simpler tasks, where behavioral principles are often effective (Hamilton & Ghatala, 1994).

Eventually, however, educators began to feel that although stimulus-response does explain many human behaviors and has a legitimate place in instruction, behaviorism alone was not sufficient to explain all the phenomena observed in learning situations. The cognitive approach began to gain attention, while the behaviorist theorists went on to explore the possibilities of programmed learning for the computer age.

Cognitive Perspective

Cognitive theories of learning deal with questions relating to cognition, or knowing (Lefrancois, 1988). Cognitive learning theories seek to explain how the brain processes and stores new information. A relatively recent offshoot of the cognitive learning theory is called the information processing theory of learning. Some of the primary fundamentals from this theory are:

- There is an implicit relationship between good teaching techniques and the sequence in which the brain processes information.
- Instructional events provide an outline and checklist which can help to
  - improve teaching effectiveness, and therefore
  - enhance learner achievement and satisfaction.

Gagné's Thoughts. Gagné's (1985) view of the cognitive theory involves the learner to process information during learning. His cognitive theory of information processing makes the following assumptions; (a) it is important to present all the necessary lower-level facts before proceeding to teach at higher levels of the knowledge hierarchy; (b) people can reason with higher-level concepts if they have learned all of the prerequisite lower-level information; and (c) it is important to use teaching steps that correspond to the internal sequence in which the brain processes information.

Vygotsky's Thoughts. Similar to Gagné, Vygotsky's views concerning the cognitive learning theory builds on these assumptions by describing the processing of information as a social activity for the learner (Wertsch, 1985). His social cognition-learning model asserts that culture is the primary determinant of individual

development. Humans are the only species to have created culture, and every human child develops in the context of a culture. Therefore, a person's learning development is affected in ways large and small by the culture, including the culture of family environment in which he or she is enmeshed.

Vygotsky maintained that culture makes two types of contributions to a person's early intellectual development. First, through culture, we acquire much of the content of our thinking, that is, our knowledge. Second, the surrounding culture provides us with the processes or means of our thinking, what Vygotsky called the tools of intellectual adaptation. In short, according to the social cognition-learning model, culture teaches us both what to think and how to think.

Moreover, cognitive development results from a dialectical process whereby we learn through problem-solving experiences shared with someone else, for example, a parent, teacher, sibling, or peer. Initially, the person interacting with a child assumes most of the responsibility for guiding the problem solving, but gradually this responsibility transfers to the child.

Since language is a primary form of interaction between people, it is through language that the rich body of knowledge that exists in the culture is passed down to new generations. As learning progresses, language comes to serve as the primary tool of intellectual adaptation. Eventually, we all learn to use internal language to direct our own behavior. This internalization becomes a process of learning, which is unique to each individual as a way of internalizing the rich body of knowledge that first existed outside the individual.

Vygotsky believed that a difference exists between what a student can do on her own and what she can do with help. Vygotskians call this difference the zone of proximal development. Since much of what is learned comes from the culture around her and much of the problem solving is mediated through the help of others, it is wrong to focus on learners in isolation. Such a focus would not reveal the processes by which new skills are acquired. Therefore, interactions with surrounding culture and social agents, such as parents, instructors, or more competent peers, contribute significantly to our intellectual development (Wertsch, 1985).

In summary, the argument as to how students learn continues to rage on today. The viewpoints from the three major theories presented—classical, behavioral, and cognitive explain the complex phenomena of learning in different yet not necessarily mutually exclusive terms. For example, the classical theorist contends that students learn from their environment. Next, the behaviorist believes that learning is a response to external stimuli that can be manipulated by an external source. And finally, the cognitive theorist views learning as a process. Although each of these theories have extreme positions that are diametrically opposed to the other theories, when one views what instructors do in the classroom, it is likely to reflect come combination of these three theoretical perspectives.

Summary

The following is summary of this chapter that links the review of the literature to the hypotheses of the study presented in Chapter 1.

Adopting Vygotsky's views on learning affects the teaching process in the following ways. First, it affects the curriculum, since students learn much through interaction; therefore, curricula should be designed to emphasize interaction between learners and learning tasks. Second, instruction must help students to perform tasks that they are generally incapable of completing on their own. With this in mind, scaffolding--where the instructor continually adjusts the level of his or her help in response to the student's level of performance--can become an effective form of teaching. Scaffolding not only produces immediate results, but also instills the skills necessary for independent problem solving in the future.

Finally, this view of learning requires that assessment methods take into account the zone of proximal development. What students can do on their own is their level of actual development and what they can do with help is their level of potential development. Two students might have the same level of actual development, but given the appropriate help from instruction, one might be able to solve many more problems than the other. Assessment methods must target both the level of actual development and the level of potential development. It is this last view of learning that leads to the rationale for the researcher's hypotheses in this study.

In this chapter, an overview of the body of literature of large classroom, computer-mediated, and hybrid instructional methods found in undergraduate courses was presented. Additionally, research on learning was reviewed, noting three specific theories of learning, which included the classical, behavioral, and cognitive perspectives of learning. It is from the cognitive perspective that the conceptual framework that guided the study is developed.

CHAPTER 3

DESIGN AND METHODS OF THE STUDY

The purpose of this chapter is to present the methodology used in this study. The research design, variables, sample population, and instruments used in the collection of data are described. Each research hypothesis is presented and followed by an explanation of the type of data collected and used to determine whether to accept or reject the null hypothesis. The final section of this chapter will focus on the data collection and analysis of the data.

Purpose

As previously stated, the purpose of this study is to describe the dynamics of a large, introductory level course in a university when incorporating varying degrees of computer-mediated instructional technology into the course delivery. Specifically, the study compared student achievement outcomes and student attitudes toward the learning experience when employing inverse levels of face-to-face and online instruction.

Design of Study

Using a combination of quantitative and qualitative data collection and analyses, the researcher followed a descriptive research design. Data were collected from the participants while taking an introductory "survey" course at a large public university. Interpreting the results enabled the researcher to form themes, patterns, and conclusions about the effect of technology on student learning, as well as student attitudes toward learning when receiving instruction with varying degrees of technology and instructor

learning when receiving instruction with varying degrees of technology and instructor interaction. Hall (1996) has noted, "universities are using technology to complement their conventional teaching. Most recognize the promise of learning technologies, but what is missing is an overarching sense of purpose along with any practical sense of what the shape and consequences of successful innovations might look like" (p. 29).

Data Collection

In this study, the researcher collected both quantitative and qualitative data. Quantitative data were collected from four sources to determine the extent that student learning had occurred and whether there were any significant differences between instructional treatments. First, during course instruction, regardless of instructional treatment received, students were administered four exams; each exam was analyzed individually and compared to other instructional treatments to determine differences among groups. Additionally, student exam averages across all four exams were compared among the treatment groups as well. Second, all student participants were given a 30-question multiple-choice instrument to determine course content knowledge at the beginning of instruction. At the end of the course instruction, the same 30-question multiple-choice instrument was re-administered to all participants as part of their final exam. Third, data were collected from course evaluations developed by the researcher that were specific to the instructional treatment received. These instruments solicited students' affective responses on a variety of course elements. Fourth, data were collected from student responses to a general course evaluation administered at the end

Qualitative data were collected through interviews, focus groups, and asynchronous message postings to hear the voices of participants in this classroom as they collectively shared the story of their experience.

The researcher collected and analyzed data from four groups of student participants over a two-year period. These student participants were enrolled in an introductory course, "Introduction to Hospitality," offered at the University of Massachusetts. Data were collected from a total of seven separate classes, a total of 942 students, which were taught using one of four instructional delivery mode treatments. First, data were collected from students of one class who completed the course with the instructor using "traditional face-to-face" instructional delivery treatment (n=214) (Hall, 1996). These students were assigned a textbook and were provided with a paper syllabus containing the outline of the course content as well as the requirements for the successful completion of the course. Students attended scheduled classes and were taught using a lecture method of instruction, using only presentation software technology in the content delivery. Students' course grades were calculated from their results from 4 multiple-choice exams, 10 quizzes, and 4 two-page papers.

Second, data were collected from students in two classes who received the course content in a "static dual mode" instructional delivery treatment (n=428). In these two classes, the instructor had the same requirements for the course as stated above, using the same text, but added a course website enabling all students to access static course materials through the Internet. The course website provided students with online access to the course syllabus, practice quizzes, and study guides. All exams and graded quizzes were administered in class in a face-to-face setting.

Third, data were collected from students in one class who completed the course instruction in a "dynamic dual mode" delivery of the course content (n=214). The difference between instructional treatment of this class and the aforementioned is that this course's website included dynamic course materials and activities through the Internet. In instructional treatment, students received an interactive course syllabus with hyperlinks to online materials and documents, quizzes, relevant hospitality business and association websites, a course calendar, a class conferencing bulletin board message center, interactive study guides, PowerPoint presentations, and student grades. Similarly to the preceding treatments, the four exams were administered face-to-face.

Finally, data were collected and analyzed from three classes where students completed the course delivered in an "online delivery" mode (n=86) (Hall, 1996). All course requirements and text were the same as in the above stated course instructional delivery modes. In these classes, students received all course material via the Internet using WebCT course management software. Students were provided an online syllabus, course schedule, lecture notes, PowerPoint presentation, online quizzes and exams, study guides, and access to student grades. The four paper assignments were submitted to the instructor via e-mail. Students were encouraged to follow the course schedule with suggested completion dates, but students were not penalized as long as they completed all course activities before the end of the term.

Research Variables

The dependent variables in this research were student learning and affective beliefs toward learning when the instructional treatments consisted of inverse amounts

of face-to-face instruction and instruction using Internet-based technology. The independent variable was the course instruction using four progressively varying degrees of technology and instructor interaction. Statistical analyses of these data included t value, analysis of variance (ANOVA), and analysis of covariance (ANCOVA). Each statistical analysis provided the researcher with a better understanding of the efficacy of factors, which effect student learning and student attitude toward learning.

Participants

The researcher analyzed data collected from 942 students enrolled in the "Introduction to Hospitality" course over the two-year period from September 1999 to May 2000. All students were enrolled in the university working toward a baccalaureate degree. The student population used for the course was comprised of students from a variety of majors offered at the university. This student population included approximately 200 students who were formally registered as students in the Hotel, Restaurant and Travel Administration Department -- home department of the course at the time of enrollment. The sample used for the current research was a representative sample of students of the university's student body.

For comparison of student achievement and student attitude toward the instructional treatment, the following is a breakdown of the four groups of students. All students received instruction under the direction of the same instructor. In the first group, there were 214 students in the sample that completed the course in the traditional instructional format. Again, all instruction was provided by the instructor in a face-to-

face format with the aid of a textbook. The second group of 428 students received the instructional treatment in static dual mode, which primarily used a traditional instructional format with the aid of a course website containing a static course syllabus and study guides. The third group was comprised of 214 students who received the course instruction using a dynamic dual mode treatment. In this treatment, students received traditional instruction supported by a dynamic course website, which included an interactive syllabus, course content, PowerPoint presentations and study guides, online graded quizzes, student conferencing area, and student grades. In the fourth group, 82 students received a flexible online treatment where all course content was delivered to the students without any face-to-face instructor contact.

Course Outline

Appendix A is a copy of the course syllabus, which describes the course, objectives, grading format, and course outline. Introduction to Hospitality is offered in a face-to-face format every fall and spring semester. Currently, the course is also offered in a flexible online format every fall, winter, spring, and summer term.

Instruments

The researcher measured student achievement for this research with a pretest, posttest, and four exams. All assessment instruments used a multiple-choice question format created by the researcher. Questions were provided to students with four possible answers. Each assessment tool remained consistent among all of the classes used in the current research. The questions compiled for pretest/posttest and exams were designed to capture the extent that students had accomplished the stated objectives of the course.

Students in the "traditional lecture" and "dual modes" took a pretest, and three of the four exams during a single 50-minute class session in a large lecture hall with their classmates. Exam 4 was a cumulative exam and included the same 30 questions that were administered in the pretest. These questions were pulled from Exam 4 to determine student improvement from pretest to posttest. Given that Exam 4 was longer than the first three exams, students were given two hours to complete. Students taking the course in the "flexible online mode" took the exams online at anytime during the course term. For the pretest and the first three exams, students were given 50 minutes to complete. Students receiving the online treatment were allowed only one time access to each exam and the exam was automatically submitted if the student reached the 50-minute time limit. For the longer Exam 4, online students were given two hours to complete. Again, students were given a one time access and time limit to complete the final exam.

Pretest

The pretest/posttest instrument included 30 multiple-choice questions whose answers the researcher expected students to know at the end of course instruction. These questions were drawn from course materials, presentations, and the assigned textbook. The course content covered 12 hospitality industry related topics and the pretest/posttest reflected an even number of questions for each topic area.

In addition to the hospitality knowledge questions, students were asked to respond to questions regarding the access and use of computers. These data were collected to help the researcher determine if there were significant limitations in

requiring students to access course information via the Internet. Over the course of four semesters, the pretest was tested for reliability using the Kuder-Richardson method of rational equivalence and had an average score of .68.

Posttest

The posttest evaluation was included in the final exam administered to students in all four treatment groups. The posttest consisted of the same 30 multiple-choice questions that were used for the pretest.

Course Exams

During the term, students were given three exams, each exam consisted of 50 multiple-choice questions that were taken from material found in the instructor presentations and the course textbook. Questions were divided evenly among the content presented and covered during the exam. At the end of the term, students received a final exam that included 100 questions, which were evenly distributed among the topic areas covered during the term. Each of these exams was rated for reliability, using the Kuder-Richardson test. The average reliability scores over the course of four semesters were .53, .73, .70, and .86, respectively.

Course Evaluations

Two course evaluations were used to identify students' attitude toward the instructional treatment that they received. The researcher developed a course evaluation that was used to collect data regarding students' attitude toward the instructional treatment received. Each instructional treatment group was given an evaluation that

contained questions that were modified to appropriately reflect the treatment received. In other words, questions were rephrased to reflect the type of instruction received. Participants were asked to rate various components of the course on a five-point Likert-like scale. Cronbach's Coefficient Alpha was used to assess the reliability of the researcher's questionnaire. The reliability score was .8967.

In addition to the tailor-made evaluation, the researcher also analyzed the results of anonymous student evaluations that are administered independently by the researcher's university. The rationale for this was to determine the validity of the researcher's custom-made instrument.

Procedure

Student data collected for this research were from students enrolled in the Introduction to Hospitality course at the University of Massachusetts. All students were fully matriculated into the university in a variety of disciplines. For students who were accepted into the Department of Hotel, Restaurant and Travel Administration, the course was a departmental requirement for graduation. All other students taking the course from other departmental majors used the course as a free elective in satisfying the university's graduation requirements.

Students were administered the measurement tools during the semester they enrolled in the course. All assessments, with the exception of the pretest, were used in the calculation of their final grade.

Research Hypotheses

R_1: Students receiving course instruction in a "traditional face-to-face mode," "static dual mode," "dynamic dual mode," or "online delivery mode" will have significantly different achievement outcomes among the four treatment groups.

R_2: Students receiving course instruction in "traditional face-to-face mode," "static dual mode," "dynamic dual mode," or "online delivery mode" will have significantly different attitudes toward the educational experience.

R_3: If the use of technology in instruction increases then the learning of students will increase.

For the first research hypothesis, the researcher compared data collected from student participants in all three instructional delivery modes. Using students' exam scores and the 30 multiple-choice knowledge instrument, the researcher applied the t-test, ANOVA, and ANCOVA statistical tests to analyze data to determine if the addition or absence of technology or face-to-face instruction had any significant relationship to student learning.

To answer the second research hypothesis, both quantitative and qualitative data were used to accept or reject this research hypothesis. Quantitative data were collected from student participants through the completion of two course evaluations. Qualitative data were collected from randomly selected students through focus groups and interviews. These data were used to make comparisons between the treatment groups.

Triangulating the results of the aforementioned data analyses, the researcher will determine if the third research hypothesis should be accepted or rejected. Simply, that

varying the use of technology inversely with instructor interaction will not have any effect on student achievement.

Date Collection and Analysis

The following section presents an explanation of the student achievement and attitude measurements collected and the statistical tests applied to the data in the study.

Measurements

The data used in this research were gathered over a two-year period during four semesters. Students enrolled in an "Introductory to Hospitality" course were randomly selected to provide the researcher with qualitative data of their experience in this large class through a questionnaire and interviews. In addition to the responses of participants, student achievement was measured using six achievement indicators. First, students participating in this research were given a pretest and posttest of knowledge questions that the instructor expected students to know by the end of the semester. Second, students' records were used to compare the results of four student exams during each of the four semesters. Over a period of four semesters, the researcher increased the amount of instructional technology available for students to learn the material presented in the course. By comparing mean scores of each of the four exams, conclusions were drawn as to the potential effectiveness of the technology to improve students' achievement. The last indicator used for comparing student achievement was to average students' exam scores for each of the semesters to determine if there was a learning curve for using the instructional tools. Finally, data were collected and analyzed through end of semester course evaluations.

Statistical Analysis

Statistical tests were employed to analyze the data collected in this research. The one sample t-test statistic was selected to test if there were significant differences between the achievement measurements collected from the various treatment groups. The t-test uses the average of the sample squared to estimate if it is the same or different from the expected mean of the population (Howell, 1999). Once it is determined that the group means were different from each other, the researcher assessed which groups were different using analysis of variance.

Since there were more than two groups the analysis of variance statistical procedure was appropriate. Using the ANOVA statistic the researcher was able to identify which groups differed from each other. The researcher selected the Scheffé post hoc test to isolate those groups, which were statistically different. The Scheffé test was selected because it is a conservative measurement reducing the chance of a Type I error. That is, accepting the null hypothesis when it should be rejected (Howell, 1999).

In the next chapter, the results of the study are presented. The chapter will begin by identifying the sample used in the study, and then the data collected from each instrument are described. After the data collected have been presented, the research hypotheses are presented in the null and the analysis of the collected data pertaining to each hypothesis are put forth, noting whether the researcher accepts or rejects the null hypotheses.

CHAPTER 4

RESULTS

Overview

This chapter is devoted to reporting the results of the research. First, a summary of the characteristics of the sample population is provided. Students enrolled in the Introduction to Hospitality course ranged from freshmen to seniors, with declared majors as well as those undecided on a major, and with varying degrees of familiarity and comfort in using online technology resources. Second, the results of student achievement from the pretest, posttest, and the four exams are summarized. Again, the researcher was looking at four different instructional treatment groups and variation across the groups is noted. Third, summations of the results from the two course evaluation surveys are provided. The researcher tailored the first survey to elicit students' attitudes toward the instructional treatment. The second survey, developed by the University of Massachusetts, is a standard questionnaire used to evaluate instruction in all university courses. These questions are an attempt to assess students' attitudes toward the preparedness of the instructor and to compare the course to other courses students have completed. The remainder of the chapter is devoted to an analysis of data to determine if the research hypotheses are accepted or rejected.

Students' Profile

There were 942 students enrolled in the Introduction to Hospitality course during the time period that the current research was conducted. The research was

conducted in four semesters between 1998 and 2001. These students represented all of the university's eight colleges and schools, with the exception of the School of Education. As shown in Table 4.1, the largest student representation was from the College of Food and Natural Resources, which is the home of the Department of Hotel, Restaurant and Travel Administration, with 396 students.

Table 4.1: Summary of Student Participant Colleges

College and School	Students Enrolled	Percentage of Total
Undeclared	82	8.70
Natural Sciences	35	3.70
School of Education	0	--
Engineering	8	0.01
Food and Natural Resources	396	42.0
Humanities and Fine Arts	301	32.0
School of Management	69	7.30
Public Health	16	1.70
Social and Behavioral Sciences	35	3.70
Total Students	942	100.00

Other students' characteristics collected by the researcher included student class level at the university summarized in Table 4.2. The largest group of students was freshmen, making up 40.5% of the total sample. The sophomore class represented 32.0% and the junior class 17.7% of the students. Finally, the smallest group was the senior class with 10.0% of the study's participants. Figure 4.1 illustrates participants' class level percentages.

Table 4.2: Student Participants' Class Level

Student Class Level	Students	Percentage
Freshman	382	40.5
Sophomore	299	32.0
Junior	167	17.7
Senior	94	10.0
Total	942	100.0

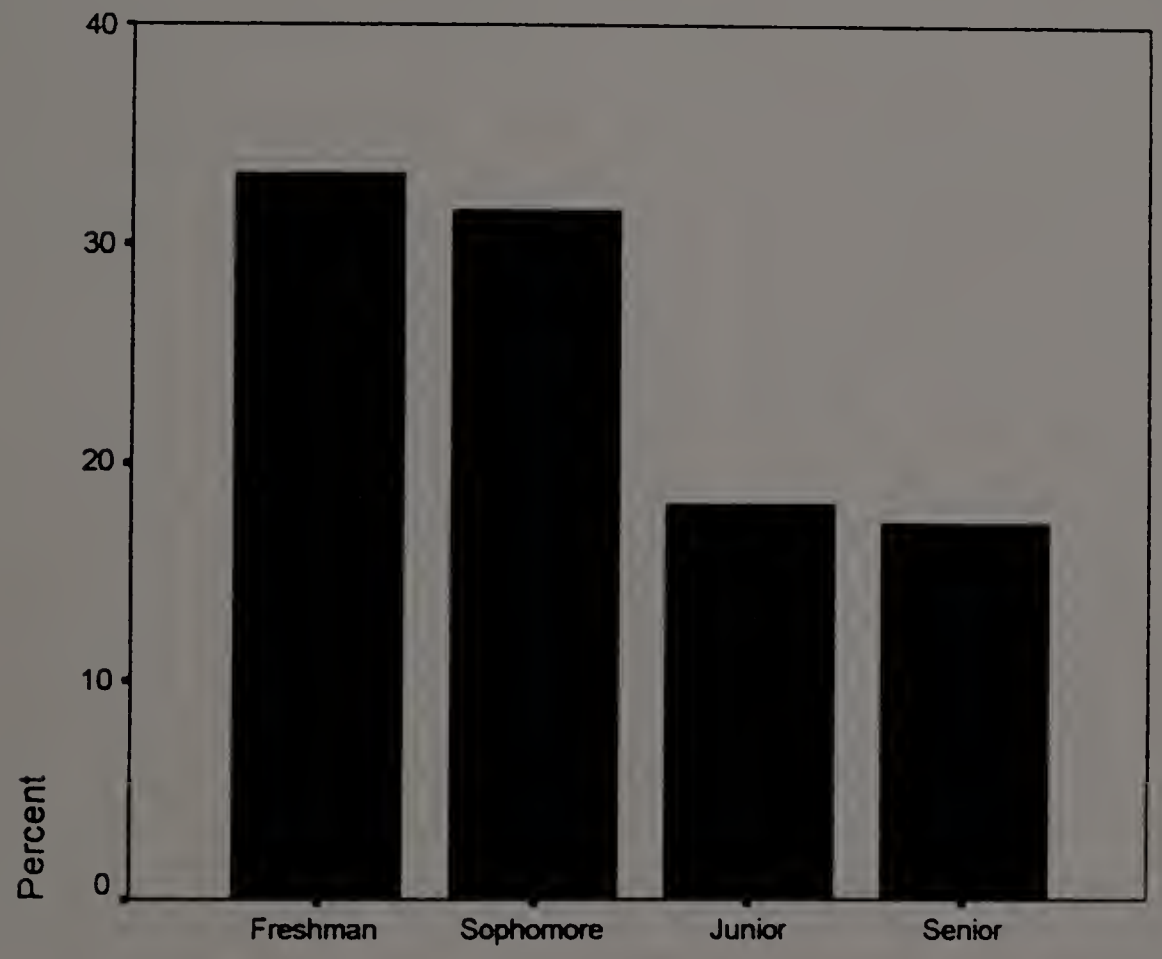

Figure 4.1: Percentage of Students by Class Level

An additional characteristic worth noting is the gender of the participating students. This information and percentages can be found in Table 4.3. A total of 511 female students and 431 male students were enrolled in the course and participated in the study. Finally, the percentages of students by college or school, class level, and gender for each of the treatment groups are presented in Table 4.4.

Table 4.3: Gender of Students Participating in Study

Gender	Students	Percentage
Female	511	54.2
Male	431	45.8
Total	942	100.0

Table: 4.4 Summary of Student Profiles by Instructional Treatment Percentage

Characteristics	Traditional Lecture Mode %	Static Dual Mode %	Dynamic Dual Mode %	Flexible Online Mode %
College or School				
Undeclared	9.4	9.8	6.5	7.0
Natural Sciences	2.3	4.7	3.7	2.3
School of Education	--	--	--	--
Engineering	0.9	1.2	0.5	--
Food and Natural Resources	48.1	41.1	33.2	53.5
Humanities and Fine Arts	31.8	28.3	44.4	19.8
School of Management	5.6	9.8	7.0	--
Public Health	0.9	2.1	0.5	4.7
Social and Behavioral Sciences	0.9	3.0	4.2	12.8
Class Level				
Freshman	42.9	36.7	23.8	16.7
Sophomore	26.6	30.6	35.5	40.7
Junior	11.2	17.8	19.6	29.1
Senior	19.2	15.0	21.0	14.0
Gender				
Male	42.5	44.4	46.3	59.3
Female	57.5	55.6	53.7	40.7

Computer Use and Availability

When completing the pretest, students were asked a variety of questions by the researcher regarding students' access and the use of computers in their lives. In student responses, only 3.1% of students stated that they had no familiarity with computers (Table 4.5). Additionally, 78% of students responded that they owned a computer,

Table 4.5: Familiarity with Computers

	Frequency	Percent
Quite a bit	533	56.6
Some	380	40.3
None	29	3.1
Total	942	100.0

which should be noted, progressively increased during the data collection period, with a low of 72% in the first semester of the research to 82% in the final semester of the study. Moreover, 92% of the students reported to have easy access to a computer while at school (Table 4.6).

Table 4.6: Student Ownership and Access to Computers On Campus

	Student Responses	Percentage
Own a computer		
Yes	735	78.0
No	207	22.0
Easy access to computer		
Yes	880	93.4
No	62	6.6

Participants' Use of E-mail and the Internet

Students were asked about their e-mail and Internet usage patterns. Approximately 86% reported to have an e-mail account and 82% of students with e-mail accounts used these accounts at least several times per week (Table 4.7). Furthermore, over 95% of participants reported to have some experience with the

Table 4.7: Students' Usage of E-mail

Usage	Students	Percent
Daily	455	48.3
Several times per week	319	33.9
Weekly	96	10.2
Less than weekly	31	3.3
Seldom	41	4.3
Total	942	100.0

Internet and were generally comfortable with the mechanics of the communication and search tools available (Table 4.8).

Table 4.8: Student Comfort Level with Internet Technology

Response	Experience with	Comfort with	Comfort with	Comfort with
Quite a bit	59%	49%	61%	61%
Somewhat	37%	28%	29%	26%
None	4%	23%	10%	13%

Two final results from the pretest survey were that when students were asked to rate the value of using the Internet, a majority of students strongly agreed with the following statements; "using Internet technology is an important lifelong skill" (65.4%) and "the Internet is a useful source for information" (76.7%).

Pretest and Posttest

In each instructional treatment, students were given a pretest and posttest, which consisted of knowledge questions that the researcher believed students should know by

the end of the semester if stated course objectives had been met. Overall, the mean score of the pretest, by all participants, was 19 correct answers out of 30, or 63.3%. The mean score of the posttest, by all participants, was 24.5 correct answers, or 81.7%. There was significant improvement at the posttest when compared to the pretest by all treatment groups. The results of the pretest and posttest by instructional treatments, gender, and class level are presented in Tables 4.9, 4.10, and 4.11, respectively.

Table 4.9: Student Mean Scores on Pretest and Posttest by Instructional Treatment

Instructional Treatment	Pretest	SD	Posttest	SD
Traditional Instruction (n=214)	18.30	4.19	24.70	3.03
Static Dual Instruction (n=428)	19.67	4.15	23.69	3.15
Dynamic Dual Instruction (n=214)	18.57	4.15	25.61	2.97
Flexible Online Instruction (n=86)	18.76	3.89	25.63	2.82
Total Sample (N=942)	19.02	4.17	24.53	3.16

Mean scores at pretest were lowest for the traditional instructional treatment at 18.30 and highest for the static dual instructional treatment at 19.67, a difference of over one question. When reporting the posttest scores, the highest mean score was found in the flexible online treatment group with 25.63 correct answers. The lowest mean score was recorded for the static dual instructional treatment with two fewer correct answers at 23.69.

When breaking down the mean scores for both the pretest and posttest by instructional treatments and gender, the lowest mean score at pretest was recorded by female students in the traditional instruction treatment group (17.73) and was found to

Table 4.10: Mean Scores on Pretest and Posttest by Instructional Treatment and Gender

Instructional Treatment	Pretest	SD	Posttest	SD
Traditional Instruction (n=214)				
Female (n=123)	17.73	4.50	24.37	3.04
Male (n=91)	19.07	3.61	25.18	2.97
Static Dual Instruction (n=428)				
Female (n =238)	19.67	4.14	23.70	3.17
Male (n=190)	19.67	4.17	23.70	3.14
Dynamic Dual Instruction (n=214)				
Female (n=115)	18.33	4.27	25.57	3.11
Male (n=99)	18.84	4.00	25.67	2.80
Flexible Online Instruction (n=86)				
Female (n=34)	19.15	3.73	25.97	2.87
Male (n=52)	18.50	4.01	25.40	2.79
Total Sample (N=942)				
Female (n=510)	18.86	4.30	24.42	3.21
Male (n=432)	19.21	4.01	24.66	3.10

be highest among both females and males receiving the static dual instructional treatment (19.67). On the posttest, the lowest mean scores were found in the static dual instruction. Both females and males in this treatment group had equal mean scores of 23.70. The highest mean posttest scores were found in the female group receiving the flexible online treatment (25.97).

When mean scores for the pretest and posttest were partitioned by treatment and class level the following results were found. The lowest mean score at pretest was found in the seniors receiving the flexible online treatment (16.08) and the highest was in juniors receiving the static dual treatment (19.79). For mean scores at posttest, the lowest mean score was found in the junior group receiving the traditional instructional treatment and the highest in freshmen receiving the flexible online treatment (26.21).

Table 4.11: Mean Scores on Pretest and Posttest by Instructional Treatment and Class Standing

Instructional Treatment	Pretest	SD	Posttest	SD
Traditional Instruction (n=214)				
Freshman (n=91)	19.07	3.61	25.18	2.96
Sophomore (n=56)	18.70	4.65	24.84	2.67
Junior (n=25)	17.34	4.64	23.34	3.01
Senior (n=42)	16.67	4.05	24.25	3.41
Static Dual Instruction (n=428)				
Freshman (n=157)	19.52	4.21	23.70	3.35
Sophomore (n=130)	19.75	4.06	23.69	2.85
Junior (n=77)	19.79	4.40	23.66	2.85
Senior (n=64)	19.72	3.91	23.72	2.69
Dynamic Dual Instruction (n=214)				
Freshman (n=51)	19.33	3.92	25.69	3.06
Sophomore (n=76)	18.59	4.39	25.75	2.78
Junior (n=43)	18.21	4.02	25.54	2.64
Senior (n=44)	17.98	4.10	25.36	3.52
Flexible Online Instruction (n=86)				
Freshman (n=14)	19.36	3.97	26.21	2.42
Sophomore (n=35)	19.49	3.32	25.49	2.81
Junior (n=25)	18.68	3.86	25.64	3.12
Senior (n=12)	16.08	4.68	25.33	2.84
Total Sample (N=942)				
Freshman (n=313)	19.35	3.98	24.57	3.24
Sophomore (n=297)	19.23	4.20	24.65	2.92
Junior (n=170)	18.87	4.33	24.38	3.35
Senior (n=162)	18.19	4.24	24.42	3.19

The similarities in standard deviations among the groups' mean scores are representative of a normal distribution of scores around the mean. Thus is further evidence that the groups were drawn from the same population.

In an analysis of data, it was found that there were no significant associations of student achievement and students' school, gender, or class level.

Exams

In each of the four semesters of the study, students were given four exams as part of their overall grade in the course. The following is a summation of the results of each exam by instructional treatment (Table 4.12). In all four exams, the lowest mean score for each exam was found in the traditional instructional treatment group and the highest mean score for Exam 1, 2, and 4 was in the flexible online treatment group. For Exam 3 the treatment group with the highest mean score was the dynamic dual instructional group. When averaging the mean scores across all treatment groups for each exam, the exam with the lowest mean score was found in Exam 4 with 71.0.

When looking at the results by treatment groups, the lowest mean score for Exam 1 was found in the traditional lecture treatment group with 69.1 and the highest mean score was found in the flexible online treatment group with 76.7. Similarly, in Exam 2, the lowest mean score was again found in the traditional instructional treatment group with 67.3 and highest in the flexible online treatment group with 80.5. For Exam 3, the low mean score, 70.4, was in the traditional instructional group and the high was 77.1, in the dynamic dual instructional group. Finally, for Exam 4, the group with the lowest mean score was the traditional instructional group with 66.5, and the group with the highest was the flexible online instruction group with 75.7.

Table 4.12: Exam Score Means by Instructional Treatment

	Traditional Instruction (n=214)	Static Dual Instruction (n=428)	Dynamic Dual Instruction (n=214)	Flexible Online Instruction (n=86)	Mean Score for All Treatments (N=942)
Exam 1					
Mean	69.1	74.2	75.8	76.7	73.7
SD	11.4	12.4	9.9	11.0	11.8
Exam 2					
Mean	67.3	70.7	79.8	80.5	72.9
SD	13.0	10.2	9.9	7.9	11.8
Exam 3					
Mean	70.4	74.8	79.1	77.1	75.4
SD	9.9	9.5	11.5	10.2	10.1
Exam 4					
Mean	66.5	69.6	75.5	75.7	71.0
SD	10.9	15.3	7.9	8.5	13.0
Total For All Exams					
Mean	68.3	72.3	77.6	77.3	73.2
SD	11.3	11.85	9.8	9.4	8.0

When looking at the cumulative mean score of all exams by treatment group, the lowest cumulative mean exam score was found in the traditional instructional group with 68.3 and the highest cumulative mean exam score was the dynamic dual instructional group with 77.6.

Course Evaluations

Instructional Treatment Evaluations

In all treatment groups, students were asked to complete a questionnaire developed by the researcher to evaluate their learning experience. A total of 746 surveys

were collected and analyzed by the researcher for a return rate of 79.2%. These data were divided into four categories for presentation. First, students were asked questions to evaluate their experience in receiving the instruction in the specific treatment. For example, "Taking this course in a large-class lecture was a helpful way to learn about the hospitality industry." In this section, students were provided with three questions and were asked to rate these statements on a five-point Likert scale with "1" = "strongly disagree" and "5" = "strongly agree." The mean score results are presented in Table 4.13. Mean scores for all treatment groups were leaning toward the "strongly agree," with mean scores over 3.0. Each treatment method appeared to satisfy student expectations in learning about the hospitality industry, resulting in adequate enjoyment and interest.

The second series of three questions asked students to rate the overall course and to provide their level of effort put into the class (Table 4.14). For these questions, students were asked to respond to each question using a five-point Likert-type scale with "1" = "not at all" and "5"= "a great deal." Students in all treatment groups rated the value of the course above average, with the traditional instructional treatment group rating the course the lowest with a mean score of 3.6. All groups reported positive ($\geq$4.0) beliefs about the quantity of information they learned about the hospitality industry. And finally, the groups had a mixed range of responses regarding the amount of effort they put into the course.

Table 4.13: Mean Scores of Instructional Treatment Experience

Instructional Treatment	Taking this class, this type of instruction was a helpful way to learn.	After this class, I am interested in a hospitality career.	I really enjoyed learning about the hospitality industry.
Traditional treatment (n=176)			
Mean	3.4	3.4	3.8
SD	0.9	1.1	0.9
Static dual treatment (n=293)			
Mean	3.5	3.6	3.7
SD	1.0	0.9	1.0
Dynamic dual treatment (n=189)			
Mean	3.5	3.6	3.7
SD	1.2	1.0	1.1
Flexible online treatment (n=86)			
Mean	3.6	3.7	3.6
SD	0.9	1.0	1.0

In the third series of questions (Table 4.15), students were asked to rate the level and suitability of course content and the amount of work required in the course. In this section, each question provided the students an opportunity to select between two opposite ends. For example, in the level of content, students were asked to answer this question on a five-point Likert-type scale with "1" = "very easy" and "5" = "very difficult." The scale for the suitability of the pace of the course was "1" = "too slow" and "5" = "too fast." The final question in this series asked students to indicate the amount of work that the course required. The scale for this questions was "1" = "too

Table 4.14: Mean Scores of Course Evaluation Questions on Learning

Instructional Treatment	Overall how valuable was this course?	How much have you learned about the hospitality industry?	How much effort did you put into this course?
Traditional treatment (n=176)			
Mean	3.6	4.0	3.7
SD	0.8	0.7	0.8
Static dual treatment (n=293)			
Mean	4.4	4.2	4.1
SD	0.9	0.9	1.0
Dynamic dual treatment (n=189)			
Mean	4.4	4.2	3.7
SD	0.9	0.9	1.0
Flexible online treatment (n=86)			
Mean	4.3	4.0	3.7
SD	0.9	1.0	0.9

little" and "5" = "too much." The traditional instructional treatment group responded that their course was the easiest when compared to the other three groups (2.9). Additionally, the traditional lecture group responded that their course was the slowest (3.0). Also, that their course required the least amount of work among the four groups. The flexible online treatment group responded with the highest mean score (too much) on "how much work did this course require?"

Table 4.15: Mean Scores of Course Evaluation Questions on Content

Instructional Treatment	Overall, how do you view the level of course content?	Overall, how suitable was the pace of the course?	How much work did this course require?
Traditional treatment (n=176)			
Mean	2.9	3.0	3.3
SD	0.6	0.4	0.6
Static dual treatment (n=293)			
Mean	4.2	4.1	3.8
SD	0.9	1.0	0.9
Dynamic dual treatment (n=189)			
Mean	4.2	4.1	3.7
SD	0.9	1.0	0.9
Flexible online treatment (n=86)			
Mean	3.9	3.8	3.7
SD	1.0	1.0	0.8

The fourth and final series of questions presented asked students to respond to open-ended questions regarding the amount of time spent on class activities. Student responses by treatment group were compared by using mean scores and are presented in Table 4.16. Overall group mean scores were very similar among all treatment groups.

University's Evaluation

All courses taught at the University of Massachusetts must have an anonymous evaluation administered, which rates the course instructor in comparison with other courses taken at the university. The evaluation instrument is the product of collaboration between the Office of Academic Planning and Assessment and the Center for Teaching

Table 4.16: Mean Scores of Course Evaluation Questions on Time Commitment – Hours per Week

Instructional Treatment	On average, how much time was spent reading the text?	On average, how much time was spent working on assignments?	On average, how much time was spent preparing for exams?	On average, how much time was spent working on this course?
Traditional treatment (n=176)				
Mean	1.6	2.0	3.0	3.9
SD	1.3	1.2	2.1	3.0
Static dual treatment (n=293)				
Mean	1.7	1.6	3.9	3.6
SD	1.3	0.9	2.8	2.5
Dynamic dual treatment (n=189)				
Mean	1.6	1.6	3.8	3.7
SD	1.5	0.9	2.6	2.8
Flexible online treatment (n=86)				
Mean	1.6	1.6	3.8	3.5
SD	1.2	.9	3.5	2.2

at the University of Massachusetts. The instrument has been used since the 1992-1993 academic year. The instrument was designed after an extensive review of the literature on student learning as well as an evaluation of contemporary evaluation practices on other campuses.

The instrument contains 12 questions and can be seen in Appendix J. The 12 items on the evaluation fall into two broad categories, "core items" and "global items." There are 9 questions that fall into the core items and they reflect six teaching constructs that are deemed important to student learning and achievement. These are skill and clarity, course structure, teacher availability and rapport with students, feedback to students, classroom interaction, and stimulation of student interest (Student Response To Instruction [SRTI], 1997). The remaining three questions, which fall under the global items, ask students about their overall rating of the course. "Research has shown that these global items are the most highly correlated with student achievement and satisfaction" (SRTI, 1997, p. 3).

The evaluation uses a five-point Likert-type scale with the first nine questions having "1" = "almost never" and "5" = "almost always." On Question 10, "overall how much do you feel you have learned?"; the scale ranges from "1" = "much less" and "5" = "much more." In Question 11, "overall rating of instructor's teaching"; "1" = "almost never effective" to "5" = "almost always effective." And Question 12, the overall rating of the course, "1" = "one of the worst" and "5" = "one of the best." The mean scores of questions for the four instructional treatment groups are presented in Table 4.17. The university administered evaluation was completed by 529 students for a response rate of 56.2%.

Table 4.17: Mean Score Results by Treatment Group on University-wide Course Evaluation

Questions	Traditional treatment (n=142)	Static dual treatment (n=214)	Dynamic dual treatment (n=96)	Flexible online treatment (n=77)
The instructor was well prepared for class.	4.56	4.75	4.79	4.21
The instructor explained course material clearly.	4.13	4.45	4.57	4.00
The instructor cleared up points of confusion for you.	3.91	4.21	4.36	4.01
The instructor used class time well.	4.36	4.43	4.61	4.20
The instructor inspired interest in the subject matter.	4.02	4.01	4.15	4.23
The instructor showed a personal interest in helping.	4.04	3.96	4.08	4.19
The instructor provided useful feedback.	3.72	3.68	3.86	3.84
The methods of evaluating your work were fair.	4.26	4.25	4.44	3.91
The instructor stimulated useful class participation.	3.77	3.83	3.87	4.61
Overall how much do you feel you learned?	3.57	3.64	3.89	3.40
Overall rating of instructor's teaching.	4.11	4.21	4.33	4.45
Overall rating of this course.	3.67	3.64	3.90	3.61

It was found that students in the dual modes (static and dynamic) rated the instruction highest in preparation, presentation of material, and using class time well. Students in the dynamic dual group rated their course as highest in the amount of material learned, which was similar to that reported in the researcher-developed evaluation. The flexible online treatment group had the highest rating for the instructor's teaching. Finally, overall course ratings for all treatment groups were similar, with the highest rating found in the dynamic dual treatment group.

Analysis of Results

Research Hypothesis 1

R_1: Students receiving course instruction in a "traditional face-to-face mode," "static dual mode," "dynamic dual mode," or "online delivery mode" will have significantly different achievement outcomes.

To determine whether to accept or reject Hypothesis 1, the research hypothesis should be restated in the null. The following is the null hypothesis.

H_0: Students receiving course instruction in a "traditional face-to-face mode," "static dual mode," "dynamic dual mode," or "online delivery mode" will not have significantly different achievement.

To determine whether to accept or reject the null hypothesis, the researcher compared the mean scores of students' pretests, posttests, and exam scores among the four treatment groups. Using analysis of variance (ANOVA) and analysis of covariance (ANCOVA), the researcher was able to make a decision as to whether there were

significant variations in students' achievement among the four instructional treatment groups.

First, in interpreting these findings, the researcher found that the mean scores for the posttest were significantly higher than on the pretest for all instructional treatment groups (Table 4.18), indicating that students' achievement had improved as a result of the instruction in all treatment groups. In other words, regardless of the treatment received, students' knowledge improved significantly from pretest to posttest. Using a paired t-test procedure, all groups' mean posttest scores were significantly higher than

Table 4.18: Results of Paired t-Test for Pretest and Posttest of Treatment Groups

	Traditional Instruction (n=214)	Static Dual Instruction (n=428)	Dynamic Dual Instruction (n=214)	Flexible Online Instruction (n=86)
Pretest	18.3	19.6	18.5	18.7
Posttest	24.7	23.6	25.6	25.6
t value	-21.1	-17.7	-23.3	-13.8
P	0.000	0.000	0.000	0.000

Significant between the means at the $p \leq 0.01$ level.

the initial pretest mean scores with the dynamic dual instruction showing the largest improvement. Figure 4.2 is a bar graph of student improvement from the pretest to posttest for each instructional treatment group.

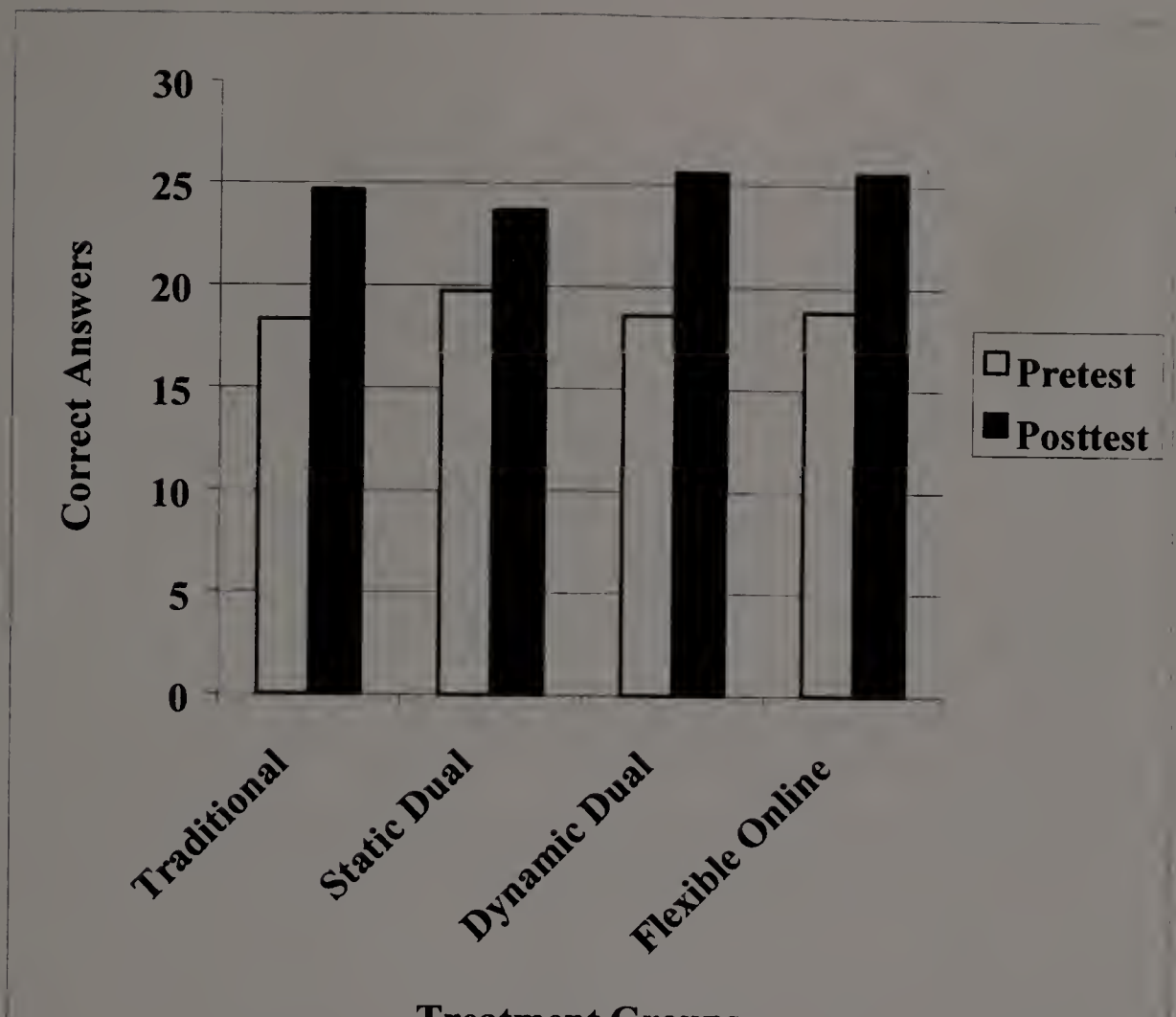

Figure 4.2: Mean Scores for Pretest and Posttest by Treatment Groups

Table 4.19 is a summary of the results of an analysis of variance for the treatment groups' pretest and posttest. The table shows the sum of squares, degrees of freedom, mean square, F score, and significance for between groups, within groups, and total. In all cases, there were significant differences among the treatment groups.

Similarly, the results of the analysis of variance for the four exams, and the cumulative average of the four exams are presented in Table 4.20. The differences among the groups for each exam and the cumulative average are found in Figure 4.3.

Table 4.19: ANOVA Results of Pretest, Posttest, Change Between Pretest and Posttest, and Percentage of Change from Pretest to Posttest

		Sum of Squares	df	Mean Square	F	p
Pretest	Treatment	342.42	3	114.1	6.7	.000
	Error	16039.03	939	17.1		
	Total	16381.45	942			
Posttest	Treatment	659.22	3	219.7	23.6	.000
	Error	8748.34	939	9.3		
	Total	9407.56	942			
Change between Pretest and Posttest	Treatment	1778.40	3	592.8	27.9	.000
	Error	19942.34	939	21.3		
	Total	21720.73	942			
Percentage of Change	Treatment	7.44	3	2.5	22.4	.000
	Error	103.91	939	.111		
	Total	111.35	942			

On all achievement measures, the F value is larget than 1, which indicates that the means of the groups are far apart, thus the groups differ significantly (SPSS, 1999; Howell, 1999). Further analysis using a post hoc test will illuminate which groups differ.

The results of the post hoc Scheffé test to help determine which treatment group mean scores were significantly different for the pretest, posttest, and the four exams are presented in Tables 4.21 through 4.24. There were significant variations among the groups on all of the achievement indicators used in the study.

Table 4.20: ANOVA Results for Exams 1 - 4 and Cumulative Exam Average

		Sum of Squares	df	Mean Square	F	p
Exam 1	Treatment	.65	3	0.22	16.9	.000
	Error	12.54	939	0.013		
	Total	13.111	942			
Exam 2	Treatment	2.35	3	0.78	70.9	.000
	Error	10.66	939	0.011		
	Total	13.01	942			
Exam 3	Treatment	1.18	3	.39	43.3	.000
	Error	9.35	939	0.009		
	Total	10.53	942			
Exam 4	Treatment	1.41	3	.469	29.3	.000
	Error	14.60	939	.016		
	Total	16.01	942			
Exam Average	Treatment	1.26	3	.42	84.0	.000
	Error	5.10	939	.005		
	Total	6.36	942			

Note: Significance at the $p \leq 0.05$ level.

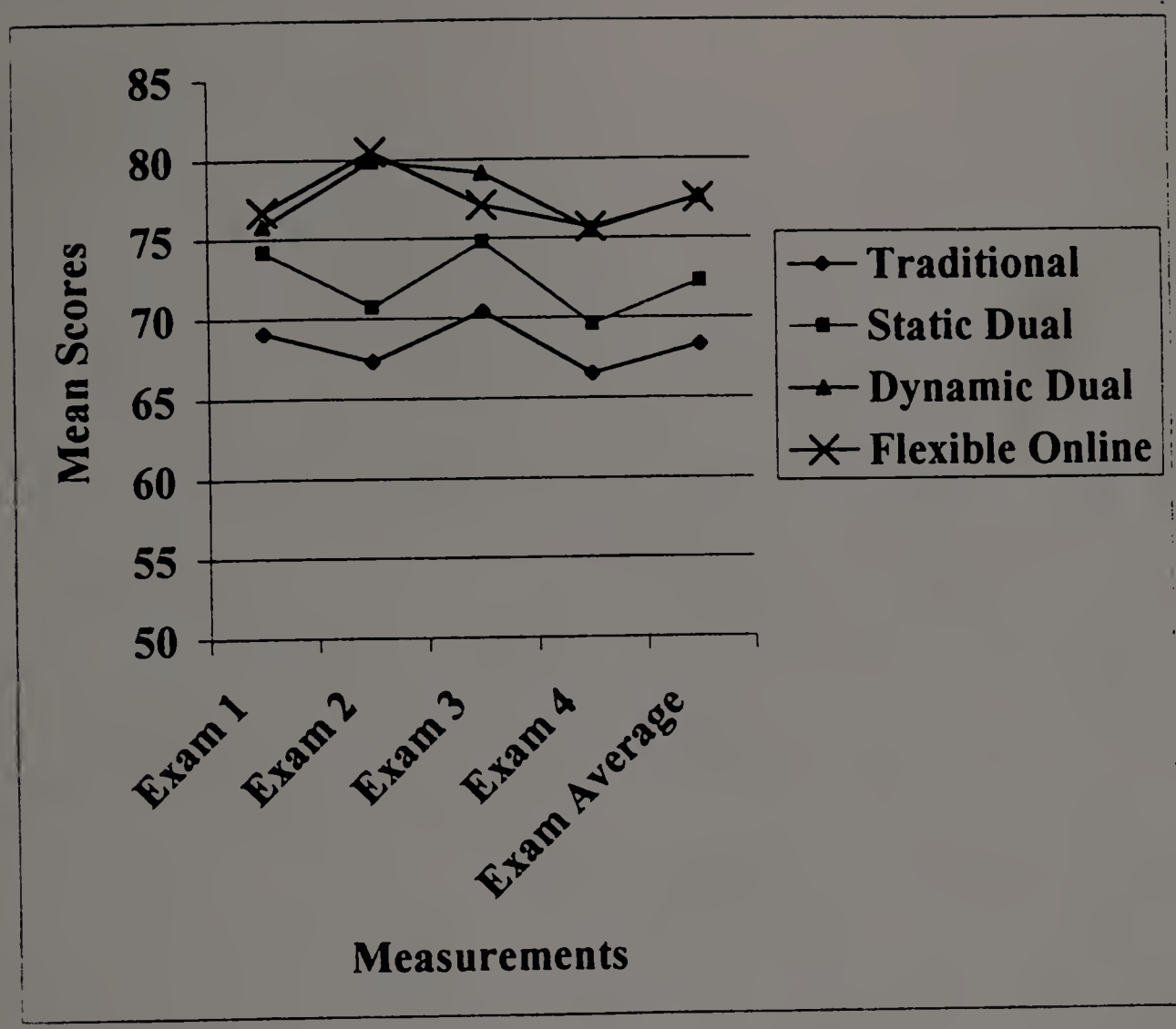

Figure 4.3: Mean Scores for Exams by Treatment Groups

The data presented in Table 4.21 show that the static dual treatment group had a significantly higher score on the pretest than the other three groups. When analyzing the data, the researcher conducted an analysis of covariance to determine if the pretest results for this group had an effect on the outcomes for the other achievement measurements used in the study. When the significantly higher pretest in the static dual instructional group at pretest was considered it was found that there continued to be significant difference among treatment groups. In other words, it is likely that the differences found among the other measurements were not due to this variance at pretest.

Table 4.21 Results of Pretest and Posttest by Treatment Group With the Scheffé Test

Pretest	Treatment	p value
Traditional instruction	Static dual instruction	.001*
	Dynamic dual instruction	.931
	Online instruction	.862
Static dual instruction	Traditional instruction	.001*
	Dynamic dual instruction	.017*
	Online instruction	.321
Dynamic dual instruction	Traditional instruction	.931
	Static dual instruction	.017*
	Online instruction	.988
Online instruction	Traditional instruction	.862
	Static dual instruction	.321
	Dynamic dual instruction	.988
Posttest		
Traditional instruction	Static dual instruction	.002*
	Dynamic dual instruction	.022*
	Online instruction	.126
Static dual instruction	Traditional instruction	.002*
	Dynamic dual instruction	.000*
	Online instruction	.000*
Dynamic dual instruction	Traditional instruction	.022*
	Static dual instruction	.000*
	Online instruction	1.000
Online instruction	Traditional instruction	.126
	Static dual instruction	.000*
	Dynamic dual instruction	1.000

* The mean difference is significant at the .05 level.

With respect to the posttest scores, there are three subsets at the 0.05 alpha level. First, the static dual instruction group was significantly lower (23.69) than the other three treatment groups (see Table 4.9, p. 69). Second, the traditional and the dynamic dual instructional groups were similar with 24.70 and 25.61, respectively. Finally, the dynamic dual and flexible online treatment groups of 25.61 and 25.63, respectively, were not significantly different. The posttest results of the static treatment group showed significantly lower achievement on the posttest measure than the other three groups.

In a comparison of the exam measurements of achievement, the following was found. In Exam 1 (Table 4.22), the traditional instructional group (69.1) had the lowest average between the groups, which was significantly lower when compared to the other three groups (see Table 4.12, p. 72). Mean scores for Exam 1 in the static (74.2), dynamic dual (75.8), and flexible online (76.7) treatment groups were not significantly different from each other.

In Exam 2 (Table 4.22), again the mean score for the traditional treatment group (67.3) was the lowest, which was significantly different than the other groups (Table 4.22). Additionally, it was found that the mean score results of the static dual (70.7) treatment group was also significantly lower than both the dynamic dual (79.8) and flexible online (80.5) treatment groups. The mean scores for the dynamic dual and flexible online treatment groups were not significantly different.

In a comparison of the results from Exam 3 (Table 4.23), the mean score for the traditional treatment group (70.4) continued to be significantly lower than the other three groups. Moreover, the dynamic dual treatment group (79.1) mean score was

Table 4.22: Results of Exam 1 and 2 When Using the Scheffé Test

	Instructional Treatment	Instructional Treatment	p value
Exam 1	Traditional instruction	Static dual instruction	.000*
		Dynamic instruction	.000*
		Flexible online instruction	.000*
	Static dual instruction	Traditional instruction	.000*
		Dynamic instruction	.433
		Flexible online instruction	.242
	Dynamic instruction	Traditional instruction	.000*
		Static dual instruction	.433
		Flexible online instruction	.884
	Flexible online instruction	Traditional instruction	.000*
		Static dual instruction	.242
		Dynamic instruction	.884
Exam 2	Traditional instruction	Static dual instruction	.002*
		Dynamic instruction	.000*
		Flexible online instruction	.000*
	Static dual instruction	Traditional instruction	.002*
		Dynamic instruction	.000*
		Flexible online instruction	.000*
	Dynamic instruction	Traditional instruction	.000*
		Static dual instruction	.000*
		Flexible online instruction	.998
	Flexible online instruction	Traditional instruction	.000*
		Static dual instruction	.000*
		Dynamic instruction	.998

* The mean difference is significant at the .05 level.

Table 4.23: Results of Exam 3 and 4 When Using the Scheffé Test

	Instructional Treatment	Instructional Treatment	p value
Exam 3	Traditional instruction	Static dual instruction	.000*
		Dynamic instruction	.000*
		Flexible online instruction	.000*
	Static dual instruction	Traditional instruction	.000*
		Dynamic instruction	.000*
		Flexible online instruction	.000*
	Dynamic instruction	Traditional instruction	.000*
		Static dual instruction	.000*
		Flexible online instruction	.270
	Flexible online instruction	Traditional instruction	.000*
		Static dual instruction	.000
		Dynamic instruction	.270
Exam 4	Traditional instruction	Static dual instruction	.034*
		Dynamic instruction	.000*
		Flexible online instruction	.000*
	Static dual instruction	Traditional instruction	.034*
		Dynamic instruction	.000*
		Flexible online instruction	.000*
	Dynamic instruction	Traditional instruction	.000*
		Static dual instruction	.000*
		Flexible online instruction	.398
	Flexible online instruction	Traditional instruction	.000*
		Static dual instruction	.000
		Dynamic instruction	.398

* The mean difference is significant at the .05 level.

significantly higher than all other groups. Lastly, the static dual (74.8) and flexible online (77.1) treatment groups did not differ significantly on Exam 3.

In the comparison of results for Exam 4 (Table 4.23), an analysis indicated that the traditional treatment group mean score (66.5) was significantly lower than the other three groups, and that the static dual treatment group score (69.6) was significantly lower than the dynamic dual and flexible online treatment groups. The mean scores for the dynamic dual (75.5) and flexible online (75.7) treatment groups were not significantly different.

Finally, when averaging the four exams and comparing student exam averages among the four treatment groups (see Table 4.12, p. 76), it was found that the traditional group continued to have significantly lower achievement scores than the other three groups (68.3) (Table 4.24). The static dual treatment group (72.3) was significantly lower than the dynamic dual (77.6) and flexible online (77.3) treatment groups and there were no significant differences between students receiving the instruction in the dynamic dual mode and the flexible online mode (Table 4.24). Moreover, as was shown in Table 4.12, as the use of technology, increased the cumulative exam scores for the group increased.

Another indicator of significant differences in achievement among the four groups can be seen by evaluating achievement gain as measured by the difference in the number of correct answers between the pretest and posttest as well as the percentage of change between the pretest and posttest among the groups (Table 4.25). When analyzing these results, it was found that the static dual instructional group had significantly less improvement in both change in correct answers between the pretest and posttest (four

Table 4.24: Significance Results of Cumulative Exam Score When Using the Scheffé Test

	Instructional Treatment	Instructional Treatment	Sig.
	Traditional instruction	Static dual instruction	.000*
		Dynamic instruction	.000*
		Flexible online instruction	.000*
	Static dual instruction	Traditional instruction	.000*
		Dynamic instruction	.000*
		Flexible online instruction	.000*
	Dynamic instruction	Traditional instruction	.000*
		Static dual instruction	.000*
		Flexible online instruction	.372
	Flexible online instruction	Traditional instruction	.000*
		Static dual instruction	.000*
		Dynamic instruction	.372

* The mean difference is significant at the .05 level.

Table 4.25: Change in the Correct Answers and Percentage of Change Between the Instructional Treatment Groups

Instructional Treatment	Absolute Difference	SD	Percentage of Change	SD
Traditional	6.4	4.4	42	37
Static Dual	4.0*	4.7	26*	30
Dynamic Dual	7.0	4.6	45	36
Flexible Online	6.9	4.6	43	36
Total	5.5	4.8	35	34

* Significant at $p \leq 0.05$ level.

additional qûestions) and the percentage of change between the pretest and posttest

(26%) than the other three treatment groups.

On the pretest, which is an indicator for student knowledge in the subject matter prior to receiving the instruction, the findings are that some of the treatment groups did not begin instruction at the same level. Differences at the pretest may have had an effect on the results for the other achievement indicators. One can see that on the pretest the highest mean was in the group receiving the static dual instruction (19.67) (see Table 4.9, p. 69). This is significantly different than the traditional and dynamic dual instruction groups, but was not significantly different then the flexible online instructional group.

Based on this analysis of the findings presented in the preceding tables and figures, the researcher can now determine whether to accept or reject H_0. The stated hypothesis; that students receiving course instruction in a "traditional face-to-face mode," "static dual mode," "dynamic dual mode," or "online delivery mode" will not have significantly different achievement, must be rejected. In other words, through the data collected in this study, it was found that achievement among the four treatment groups is significantly different. The variances among the groups were statistically significant on all achievement measurements used in this research. Although differences among the groups did not follow a consistent pattern on each of the achievement measurements, a trend was identified. Generally speaking, students receiving the more static instruction (traditional and static dual) tended to do significantly poorer than those students receiving instruction that incorporated the Internet tools. This trend was most apparent when comparing the results of the cumulative averages among the four treatment groups.

Research Hypothesis 2

R_2: Students receiving course instruction in "traditional face-to-face mode," "static dual mode," "dynamic dual mode," or "online delivery mode" will have significantly different attitudes toward the educational experience.

The following is the research hypothesis stated in the null.

H_0: Students receiving course instruction in "traditional face-to-face mode," "static dual mode," "dynamic dual mode," or "online delivery mode" will not have significantly different attitudes toward the educational experience.

To determine whether this hypothesis should be accepted or rejected, the researcher compared and analyzed student responses to the instructional treatment evaluation instrument that was developed for the current research and the course evaluation form developed by the university and is administered to all classes taught at the university. Data were analyzed using analysis of variance statistical tests.

Instructional Treatment Evaluations. When analyzing the groups' responses to the course evaluations, it was found that there were significant differences with 5 of the 13 questions on the instructional treatment evaluation. All treatments groups responded similarly that the instruction was a helpful way to learn the subject matter, increased their interest in a hospitality career, and they enjoyed learning about the hospitality industry. Groups did differ in their response to the overall value of the course (Table 4.26). Two homogenous subsets were found. Groups found in the same subset were not significantly different. The traditional instructional treatment group found the course to be significantly less valuable than the other three treatment groups. There were no significant differences in the responses from the other three treatment groups.

Table 4.26: Means for Treatment Groups in Homogeneous Subsets for Course Value

Instructional Treatment	N	1	2
Traditional	177	3.6	
Static Dual	293		4.3
Dynamic Dual	189		4.4
Flexible Online	86		4.4

Subset at $p \leq 0.05$.

Although significant differences between the traditional treatment group and the other treatment groups as to the value of the course were found, there were no differences among groups' responses with respect to how much they learned or the amount of effort he/she expended into the course. On these two questions, the instructional treatment did not make a difference.

Significant differences were found among the treatment groups with respect to the level of course content, the pace of the course, and the amount of work required. On the first two questions, the traditional treatment group varied significantly from the other three treatment groups (Table 4.27 and Table 4.28). These tables show that there were three subsets of group responses. Responses from students in the traditional treatment group indicated that they felt the level of course content was easier than was reported by students in the other groups. Responses from the flexible online group were also significantly different from the two dual treatment groups. Similar results were found with respect to the pace of the course. The traditional treatment group responded that the pace of the course was better than was reported by respondents in the other

Table 4.27: Means for Treatment Groups in Homogeneous Subsets for the Level of Course Content

1 = too easy, 5 = too difficult

Instructional Treatment	n	1	2	3
Traditional	177	2.9		
Static Dual	293		4.2	
Dynamic Dual	189		4.2	
Flexible Online	86			3.6

Subset at $p \leq 0.05$.

Table 4.28: Means for Treatment Groups in Homogeneous Subsets for the Pace of the Course

1= too slow, 5 = too fast

Instructional Treatment	n	1	2	3
Traditional	177	3.3		
Static Dual	293		4.1	
Dynamic Dual	189		4.1	
Flexible Online	86			3.8

Subset at $p \leq 0.05$.

three groups. Apparently, the other treatment groups rated the pace of the course more towards being too fast (Table 4.28). It should be noted that the average response from these groups ranged between 3.8 and 4.1.

When treatment groups were asked to respond to the amount of work the course required, it was found that the traditional group's responses were significantly different than the other three groups (see Table 4.29). The former group responded that the course required less work than was reported by the other treatment groups. Although there were significant differences among groups, it does not appear that any groups felt that the work was too much. On this question, there were two subsets for alpha at 0.05.

Table 4.29: Means for Treatment Groups in Homogeneous Subsets for Quantity of Work Required

1= too little, 5 = too much

Instructional Treatment	N	1	2
Traditional	177	3.3	
Static Dual	293		3.7
Dynamic Dual	189		3.7
Flexible Online	86		3.8

Subset at $p \leq 0.05$.

When groups were asked to respond as to the amount of time spent on class activities, all group responded similarly in the amount of time reading the text, preparing for exams, and the total time spent working on the course. The only variation was with the traditional treatment group with their response of spending significantly more time on assignments than the other three groups (Table 4.30). Again, there were two subsets for alpha at 0.05.

Table 4.30: Means for Treatment Groups in Homogeneous Subsets for Time Spent on Assignments

Instructional Treatment	n	1	2
Traditional	177	2.0	
Static Dual	293		1.6
Dynamic Dual	189		1.6
Flexible Online	86		1.6

Subset at $p \leq 0.05$.

University's Evaluation. With respect to the data collected from the course evaluation prepared and delivered by the university, significant differences among the treatment groups were found on five of the nine "core items" and one of the three

"global items." For the core items, differences among groups were found in instructor preparation, explaining concepts clearly, clarifying confusion, using time wisely, and showing personal interest. The significant differences among the groups are shown in Table 4.31. The groups receiving the dual methods of instruction rated the instructor significantly higher with respect to preparation, explaining course materials, clearing up confusion, and using class time well than did the other two treatment groups. The online treatment group rated the instructor significantly higher on inspiring interest in subject matter, showing personal interest in helping students learn, and stimulating useful class participation.

For the global items, significant differences were found on the overall rating of the instructor's teaching. Both the dynamic dual and flexible online treatment groups rated the instructor's teaching as significantly better than the traditional and static dual treatment groups. There were no significant differences in groups' responses in the amount of material learned or the overall rating of the course.

Based on these results from the data collected from student responses for the two evaluations administered to the four treatment groups, the second H_0 should be rejected for several reasons. First, in the analysis of data from the researcher's prepared instructional method evaluation, it was found that there were significant variations among the groups on five questions on this instrument. Students receiving instruction in the traditional mode responded that the course was significantly less valuable and content was easier than the other three instructional treatment groups. Moreover, significant differences were found with the static and dynamic dual treatment groups'

Table 4.31: Mean Score Results by Treatment Group on University-wide Course Evaluation

Questions	Traditional treatment (n=142)	Static dual treatment (n=214)	Dynamic dual treatment (n=96)	Flexible online treatment (n=77)
The instructor was well prepared for class.	4.56[b]	4.75[a]	4.79[a]	4.21[b]
The instructor explained course material clearly.	4.13[b]	4.45[a]	4.57[a]	4.00[b]
The instructor cleared up points of confusion for you.	3.91[b]	4.21[a]	4.36[a]	4.01[b]
The instructor used class time well.	4.36[b]	4.43[a]	4.61[a]	4.20[b]
The instructor inspired interest in the subject matter.	4.02[b]	4.01[b]	4.15[b]	4.23
The instructor showed a personal interest in helping.	4.04[b]	3.96[b]	4.08[b]	4.19[a]
The instructor provided useful feedback.	3.72	3.68	3.86	3.84
The methods of evaluating your work were fair.	4.26	4.25	4.44	3.91
The instructor stimulated useful class participation.	3.77[b]	3.83[b]	3.87[b]	4.61[a]
Overall how much do you feel you learned?	3.57	3.64	3.89	3.40
Overall rating of instructor's teaching.	4.11[b]	4.21[b]	4.33[a]	4.45[a]
Overall rating of this course.	3.67	3.64	3.90	3.61

Significant differences among treatment groups have different superscripts. Significance is at $p \leq 0.05$.

responses that the course was more difficult and proceeded faster than both the traditional and flexible online treatment groups. Second, significant variations were found among the groups on eight questions from the university evaluation. Although groups' responses on their overall attitude of the instructional method received did not differ, the dynamic dual and flexible online treatment groups rated the instructor's teaching as significantly better than did the other treatment groups. Significant variations were found among the treatment groups on seven key instructional constructs. These included instructor preparation, clarifying confusion among students, explanation of concepts, and showing personal interest in student learning. Finally, significant differences were found in students' responses among groups on the overall rating of the instructor's teaching. Students receiving the dynamic dual and online flexible treatments rated the instructor significantly higher than the traditional and static treatment groups.

The following is summary of student comments collected during the study. These student voices provide qualitative data of the attitudes of students toward receiving the course through instruction in one of the four instructional treatments. Student comments are organized by positive and negative remarks within the instructional treatment group.

Students' Voices. In this section, a brief summary of student responses will be presented. Although quantitative data were analyzed to determine whether to accept or reject the three research hypotheses, qualitative data collected from students had the potential to add significantly to the quality of the instructional evaluation process. In each instructional treatment group, the researcher collected student responses regarding their instructional experience. Data were collected from students through face-to-face

interviews, focus groups, e-mail, and open-ended comments on instructional and course evaluations.

Face-to-Face Traditional Instructional Mode. Overall, students expressed that they enjoyed the course taught using this instructional format, but gave common remarks regarding the negative aspects of the course.

- "too much lecturing"
- "overheads get boring"
- "needs to be more specific in his lectures"
- "less note-taking and more participation"
- "needs (instructor) to allow more time for copying notes"
- "smaller classes"
- "an easier way to get grades"
- "too much material covered in one period"

Positive comments regarding the course revolved around the instructor and tended to center on the instructor's personality, industry experience, and the course organization.

Static Dual Instructional Mode. Student comments from those receiving the static dual instructional treatment found that the website was useful and typically had comments along the line of making greater use of the website. Negative comments included, "too much reliance on technology to distribute materials." Adding course materials online did not eliminate frequent comments regarding the size of the class.

Positive Comments:

- "it was nice to find course schedules online"
- "the best part was the study guide was made available on the Internet"
- "use the Internet for quizzes"
- "an easy way to get grades"
- "for those without computers, should be able to get grades in an easier fashion"

Negative Comments:

- "make materials easier to get without going online"
- "add class discussions"
- "the website is hard to get around"
- "posting materials online was difficult to access if you do not have a computer"
- "I think there was too much use of technology"
- "more thorough notes online"
- "webpage should be updated more often"

Dynamic Dual Instructional Treatment. Comments in the dynamic dual instruction generally were in two camps. For those students who enjoyed using technology, the emphasis was on using it more in the course instruction. For students who disliked using technology, the course was cumbersome and made the course harder than it should have been.

Positive Comments:

- "I really liked how the course material was all connected with a website"
- "the website was great with the availability of homework, notes, grades, etc."
- "instructor was helpful, especially the website"
- "I liked the website with all of the notes and our grades"
- "I liked the web interaction"
- "I like how all of the information is on the website"
- "I really appreciated having the presentations on the Internet"
- "website was easy to use"
- "even though this was a large class it felt like a small class"
- "detailed descriptions and links from the website"
- "the website is an excellent service to students"
- "I liked the website because whenever I had any doubt everything was right there"

Negative Comments:

- "easier access for the website"
- "update the grades on the website faster"
- "there seems to be a lot of work for a 100 level course"
- "this instructor has made a straightforward class very difficult"
- "too much work"

Flexible Online Instructional Treatment. Many students receiving the flexible online treatment enjoyed the experience of taking a course online. Only three students enrolled in the flexible online treatment group had taken a prior course online, so it is

possible that students were captivated by a unique learning experience. Generally, students felt that it was very easy to get behind in the course work and often found the initial learning experience stressful. Though once students began to interact with the material, most students were able to gain confidence and experience with this new way of learning.

Student Comments:

- "I really enjoyed not only the content of this class, but the format, too. This was my first Internet class and I felt that it was very user-friendly, even for someone who isn't very computer literate. The content covered was very interesting and I enjoyed and appreciated the utilization of all sorts of media to learn. I enjoyed the class very much and think the great instruction was a major component of my enjoyment."

- "Being my first online course, I was rather uncertain as to how it would go, but I was pleasantly surprised. I figured that an online class would be really easy and something that I would be able to do solely in my free time … I never thought I had so much "free time."

- "The class did demand time, especially with the readings and assignments. I especially enjoyed the assignments, and was pleased to find so many helpful Internet sites out there. This was the only negative thing about the class – the ability to get behind."

- "I was rather pleased by how rapidly things were graded and how quickly we received follow-up e-mails."

- "I would recommend the class to just about anyone, since the class is so open and free flowing. "Hospitality" who does not need to know about that!"

- "I must say that I thoroughly enjoyed this course. The course set-up was easy to understand and navigate. I found the material to be interesting and not too difficult to follow. I really liked the idea of having an online grade book so I could keep track of my grades and assignments. I also liked the checklist. Sometimes I was a little confused as to what units needed completion and this was a good way to organize online information."

- "I felt that at times there was a lot of reading and it was easy for me to fall behind, but I realize that this is an online class, and only so much material can be reviewed over a span of time."

- "This was my first online course I have taken but I am glad that it was because it makes me feel that it is a great way of learning."

- "I am glad that I received this opportunity for learning so much information in a different setting. I would definitely recommend this online course to others who want to learn about interesting topics by using today's technology."

- "The course setup was really easy to navigate and there was great help in knowing my grades through the grade book. The response time was excellent. I appreciated the quick feedback from the professor."

- "My expectations I must say for this class weren't too high because I didn't feel that this class could offer anything close to a real classroom experience, and I was pleasantly surprised to find that it was a very great learning experience."

- "I enjoyed it thoroughly and would continue to take these types of classes online in the future. An excellent experience all-around."

- "I have never taken an online course before so I thought this class would have been more difficult. After taking this online course, I would definitely take another online course."

- "I have never taken an online class, but I am already considering another one for summer session."

- "They made it easy to find out more information for assignments, etc. I really enjoyed the class. I got more out of it than I had expected to"

- "I enjoyed the course. I think learning online was a nice change from the classroom setting."

Taking a course online was not for everyone. Of the 86 students that were used for this research, 6 students did not complete the online version of the course. These students found the absence of face-to-face instruction too difficult and either withdrew

from the course because it did not meet their expectations or because they had fallen too far behind to make a positive impact on their grade.

Given the numerous significant differences among groups with respect to students' attitudes toward the instruction as well as students' responses, the instructional treatment did have an effect on groups' responses. Therefore the null hypothesis, that course instruction would not have an effect on student attitudes toward the educational experience should be rejected.

Research Hypothesis 3

R_3: If the use of technology in instruction increases then the learning of students will increase.

This research hypothesis stated in the null is as follows:

H_0: Increasing the use of technology in the instructional treatment will not have any effect on student learning.

This research entailed an evaluation of student achievement when using a variety of instructional treatments. Each of the instructional treatments evaluated used varying amounts of technology in the delivery of course content. The traditional instructional treatment group received instruction without the use of technology as defined in Chapter 1. That is, the instructor lectured to students during class using instructional tools that were limited to an overhead projector and a chalkboard.

In the static instructional treatment group, instruction included the use of a course website that housed static course materials. When lecturing to the group, the

instructor used the same tools as in the traditional instructional treatment as well as presentations published with the help of Microsoft's PowerPoint presentation software.

For the dynamic instructional treatment group, the instructor added dynamic instructional tools to the course website, and required students to access some of the course content during out-of-class time. While instruction occurred in face-to-face class sessions, the instructor used the same tools found in the static instructional treatment.

Students taking the course in the flexible online treatment were provided with a course website that housed all course materials and were expected to complete course content in a specified amount of time with limited instructor contact. The instructor posted a limited amount of group postings and responded to students only when students had questions about course content or class management issues.

Adding instructional technology, as has been defined in the current research, was found to have an effect on student achievement. In fact, increasing the level of technology in the delivery of course content was found to have a positive effect on student achievement.

Figure 4.3 (p. 85) is a good illustration of the impact of adding technology into the instruction of this course. As the use of technology was added into the instructional strategy of the course, students' achievement increased for each measurement used in this research. Moreover, when analyzing achievement outcome results from students taking the flexible online treatment, these students' achievement was comparable to those of students receiving the dynamic dual treatment. This suggests that using instructional technology without routine face-to-face contact with an instructor leads to

significantly better student outcomes than those of students receiving face-to-face instruction alone.

Therefore, based on the data collected and analyzed in this research, the H_0 should be rejected. Increasing technology in the instruction of the course did have a positive effect on student achievement. The results of the current research have led the researcher to accept all of the research hypotheses posited.

Additional analyses were conducted to determine if there was any effect on student achievement from other factors. Additional factors considered were student class level, declared major, or gender. It was found that the kind of instructional treatment received accounted for 54% of the student achievement. There was not any appreciable correlation when considering student's class level, declared major, and gender. In other words, each of these factors was found to be a weak indicator of student achievement.

A summary of the results of the study is presented in Chapter 5. The findings of the study are compared and contrasted with the findings from earlier research conducted in large, computer-mediated, and hybrid classrooms, reviewed in Chapter 2. Implications of the findings of the current research are noted for future practice and research.

CHAPTER 5

SUMMARY AND IMPLICATIONS

In this chapter, a summary of the findings is presented. Results of the study are compared and contrasted with the findings from earlier studies that were reviewed in Chapter 2. The summary begins by noting the current results of student achievement with the results found in earlier studies in large, computer-mediated, hybrid and flexible online classroom environments. This is followed by a similar presentation of results for student attitudes. Next, five limitations of the current study are noted. In the remaining portion of the chapter, the implications of these findings for future research and practice are presented.

Summary

This study was guided by three research hypotheses, originally referred to in Chapter 1. Data were collected from students receiving instruction in the undergraduate level course, "Introduction to Hospitality," which is a survey course taught at the University of Massachusetts Amherst, in one of four instructional delivery modes. Students received course content delivered by face-to-face traditional instructional mode, static dual instructional mode, dynamic dual instructional mode, or flexible online instructional mode. The researcher applied lessons learned from the disparate body of research in undergraduate classroom instruction presented in Chapter 2. Theories about the impact of active learning on student achievement and attitudes were developed from these reported findings. The essence of this research was to determine if

there were any differences in students' achievement or students' attitude toward the instruction among the four treatment groups.

Successful student learning and positive student attitudes have been reported in both large classrooms and computer-mediated classrooms (McKeachie, 1980a; Atherton, 1972; Wulff et al., 1987; Richardson, 2000; Egan et al., 1992; Marsh & Wells, 1996). Based on the literature reviewed, the researcher theorized that students would be better served when receiving instruction that used a combination of face-to-face instruction and active learning (dynamic dual mode), than would be the case with the traditional or online treatment mode. In the current research, it was found that students receiving the dynamic dual instructional treatment achieved higher exam results than students receiving the more passive instruction. Yet, students receiving the online treatments, which required students to be the most active in their learning, had achievement that was equal to that found in the dynamic dual instructional treatment group. The following is a summary of the findings of the current research and their implications for instruction in large undergraduate classrooms.

Student Achievement

Large Classes

Prior research conducted in large undergraduate classrooms has been mixed, but findings reported from those studies have consistently indicated that, under the appropriate educational goals, these environments can be as effective for student achievement as are found in smaller classes. The current research compared student

achievement among four instructional treatments. In three—traditional, static dual, and dynamic dual modes, students met face-to-face with the instructor and 220 fellow students in a large auditorium. The following is a summary of findings.

Reports of research about evaluating student performance in large classes have indicated student achievement in large classes to be similar to those in smaller classes on acquisition of factual information (McKeachie, 1980a). Atherton (1972) compared achievement of students in large classes with and without smaller independent study groups and found that students in smaller independent groups outscored students in the large class instruction alone. The current research found that significant differences occurred in student learning in large classes by adding online components to traditional instructional methods, creating a hybrid of instructional presentation. In the current research, students receiving instruction that was supported by the Internet, which provides students the control to create independent study activities outside of the classroom, had significantly higher achievement scores than students provided only traditional instruction. These findings support the work of Atherton.

Brooks (1987) and Dede (1997) have made the case that it is difficult to measure student learning in large class sections other than with multiple-choice exams. The current research measured student achievement by scores on multiple-choice exams and found positive results in student achievement by adding technology to the instruction. By incorporating the Internet into the instruction of large classes, instructors could expect similar results to be achieved with the evaluation of higher levels of thinking and learning skills, such as those described by Bloom (1956). Furthermore, instructors that

choose to integrate the Internet in their instruction will find that the tools available make it easier to assess student skills within these domains.

Computer-Mediated Instruction

The current research findings concur with those of Souder (1993), Egan et al. (1992), Marsh & Wells (1996), Schutte (1997), Dutton et al. (1999), and Navarro and Shoemaker (1999), which found that students receiving online instruction had significantly higher achievement than students in a traditional instructional format. An exciting finding of the current research is that when Internet instructional devices are added to traditional instruction these students have similar achievement as the students in the flexible online treatment group.

Conversely, the findings of the current research do not support the findings of Cheng et al. (1991) and Clarke (1999), which found no differences in student achievement due to differences in the method of instruction. It was clear on all achievement measurements used in the current research that students receiving traditional instruction had significantly lower achievement than the students receiving the other three instructional treatments.

Hybrid Classrooms. In the current findings, students receiving the dynamic dual instruction had 14.5% higher cumulative exam scores than students in the traditional instructional mode. This result is consistent with the findings of Day (1996), who also found that students receiving instruction supported by the use of the Internet scored significantly higher achievement than students not receiving instruction supported by the Internet.

Althaus (1998) found that adding online discussions to face-to-face classrooms provided an environment superior to that of traditional classrooms. Students in his study using online discussions in support of face-to-face discussions had significantly higher student performance than those students who did not have online discussions. In the current study, the instructor did not use online discussions as a component of instruction and possibly could have found higher student achievement in the dynamic dual treatment by adding this component with little additional effort.

Additionally, the current findings that the dynamic dual treatment group had significantly higher achievement than found in the traditional treatment group are consistent with theorists who have long claimed that active student involvement enhances learning (Rogers, 1969; Astin, 1984; Holmburg, 1989). An important implication of these results is that the addition of Internet tools readily available to undergraduate instructors has the potential to increase student participation in their learning and thus improve learning outcomes.

Flexible Online Instruction. An important pedagogical characteristic of using the Internet in course instruction is that students have opportunities to be active in the learning of material. Vygotsky argued that cognitive development is the result of shared and learned problem-solving experiences (Wertsch, 1985). The use of web-based tools, found in the dynamic dual method, attempted to foster an environment whereby students solve problems with peers in their class. Moreover, Vygotsky recognized that there were potential differences between what students can achieve on their own and what they can with help (Wertsch, 1985), suggesting that the dual instructional treatment groups should have higher achievement levels than the other groups.

Students enrolled in the flexible online treatment, like those students in the dual modes, were given course content via the Internet, but were left to take responsibility for learning without routine intervention from the instructor. It was found that the lack of routine instructor intervention was not a mediating factor that led to a significant loss of power from the more active learning.

As is evidenced by the research provided in this report, the use of the Internet to deliver course content is growing. Traditionally, the power of the Internet for course delivery has focused on distance learners who are unable to participate in a traditional classroom. However, there is significant value of its use in the traditional classroom. It is hoped that the utilization of these tools will increasingly be added to support traditional instruction in the future.

The results found in this research were obtained by adding instructional tools to the traditional large class learning experience. Additional theoretical considerations for designing courses that utilize these tools will need to be considered by future instructors. Using the Internet to provide student access to course content allows students greater control of their learning experience. Student-centered learning is demonstrated by selecting educational activities as well as creating the students' own learning opportunities that will satisfy their own learning needs (Hooper & Hannafin, 1991). In contrast, many large university classrooms are program-centered and provide students with highly structured and organized program with minimum learning activities.

Student Attitude

It was theorized that students' attitude toward the instruction would differ based on the instructional treatment received. Previous findings have indicated that students receiving the traditional and the flexible online instruction have lower satisfaction toward the instruction than students in the dual modes of instruction (Hall, 1996; Gilbert, 2001). Earlier researchers have found that students in large classes with traditional instruction disliked the passivity of instruction (Wulff et al, 1987) and students in online environments felt isolated (Hall, 1996; Miller and Cohen, 2001; Plant, 1997), both resulting in low student satisfaction. Therefore, adding instructional and learning components that increase student activity, yet do not remove routine face-to-face instructor interaction, may have a positive effect on student attitudes toward the instruction over students receiving either a traditional instruction or flexible online instruction. Yet, this begs the question, how much activity should an instructor add, before negatively affecting students' attitudes because they feel that the workload is more than other classes? The findings of this study indicate students receiving the dynamic dual instructional treatment had a more positive attitude toward their course instruction.

Large Classes

A common concern with instruction in large classes has been the passivity of the instruction (Wulff et al., 1987: Richardson, 2000), impersonal nature of large classes, and distractions from unruly students (McKeachie, 1980a). In the current research, students received their face-to-face instruction in large classrooms. It was

found that in all treatment groups where all or part of the instruction was face-to-face these same negative barriers to student learning were reported.

Many of the negative and positive comments from students in the traditional face-to-face instruction treatment group tended to be in reference to the personality of the instructor, for example, he talks too much, is too intense, is easy to talk to, and is a nice person. These were similar to findings reported by Carbone (1998), Weaver and Cotrell (1987), Lowman (1987), and Geske (1991). Interestingly, the frequency of instructor's personality related comment lessened in the dual instructional modes. Providing additional opportunities to interact with course materials outside of class had an effect on reducing student focus on the instructor's personality.

Likewise, students in the dual treatment modes were more likely to respond negatively toward the level of work required in the large introductory level class than students receiving the traditional treatment mode. Wulff et al. (1987), Carbone (1998), and Richardson (2000) all reported that students felt large classes were less detailed and strenuous. Moreover, in the current study, student negative comments regarding the quantity of work increased as technology was added to the instruction. In other words, as technology increased students reported that the workload of the course was greater than was the workload reported by students in the treatment groups where the use of technology was minimal or non-existent.

The current findings support the work of Levin, (1988), Maxwell and Lopus (1995), and Slavin (1990) in that large classes were rated equally as well as smaller classes. Regardless of the instructional treatments that students received, all classes

were rated well when compared to other classes these students had taken at the university.

Finally, as was reported by Geske (1991), regardless of the methods used to reach students in large classes, some students will leave the course unhappy with the instruction. It was found among all treatment groups, that while most students reported that they were satisfied with the method of instruction, there were some students reporting dissatisfaction with the quality of the instruction received.

Computer-Mediated Instruction

The findings of this research are in consistent with Dutton et al. (1999), Gaud (1999), and Freberg (2000), who found that students appreciated the breadth and depth that Internet instructional activities bring to the classroom. This study found that by adding the dimension of the Internet to the instruction there was a positive effect on student learning. Moreover, students' responses indicated that they appreciated the opportunity to learn the subject matter using this new media. This finding was especially true for both the dynamic dual and flexible online treatment groups. Merely adding static course material online to instruction has little effect on improving student achievement.

Students in the flexible online treatment group reported that the course instruction was user-friendly and appropriate in rigor. These findings concur with those reported by both Kubala (1998) and Townley (1997). Additionally, students receiving the dynamic dual instructional treatment reported that they enjoyed the opportunity to interact with course content in a real-life setting, as was made possible by using the

Internet. The Internet activities used in the dynamic dual instruction provided students an opportunity to bridge a connection with the world outside of the university. Again, this finding is similar to those reported by Enochs (1994) and Plant (1997).

Student attitude toward the instructional treatments varied among the treatment groups. Students that received instructional treatment with greater learning opportunities were more likely to enjoy the overall learning experience than those students with less learning opportunities in their instruction. The one caveat to this appears to be (at least for the introductory level course used in this research) that some students will not appreciate the additional opportunities to learn and will rate the course as requiring too much work.

Shifting From Face-to-Face to Distance Instruction

Lastly, it was theorized that as the use of technology increased in the instructional process and face-to-face instructor interaction decreased, student attitudes toward the instructional method would change. It was believed that varying the amount of face-to-face connection between students and the instructor, which causes students to shift in the reliance on getting information from the instructor, would have some effect on students' attitude toward the instructional treatment. It was unclear as to what direction students' attitude toward their instruction would move. In other words, are students more satisfied as they gain more control over their learning experience as earlier research findings suggest (Kinzie, Sullivan, & Berdel, 1988; Newman, 1957)? This study found that students, who received instruction using the greatest amount of technology, rated their courses higher than students receiving minimal or no technology

in their instruction. In accepting these findings, it should be clear that it was not the technology that improved student outcomes but rather more opportunities to engage and participate actively in the learning of the subject matter.

The findings of this study exemplify the merits for increasing the use of technology in classroom instruction at the undergraduate level, especially when the technology provides a means to increase students' opportunities to learn that better meet their needs and goals. The student achievement results found in the current research from posttest and exam scores showed progressive improvement in students' achievement when the use of technology, to provide additional instructional moments, was increased in the instructional process. Additionally, it was found that as face-to-face instructor interaction was removed completely from the instructional treatment, as in the flexible online treatment group, student achievement was comparable to the instruction group with face-to-face instruction and active learning components. These findings, gleaned from this research, support findings from earlier research conducted in undergraduate classrooms where student achievement and attitudes were compared among instructional treatments.

Advantages and disadvantages to the lecture method of instruction that is all too typical of large classrooms were found throughout the review of literature of large class environments. Positive and negative attributes from lecturing include, but are not limited to, the following (Cashin, 1985, pp. 2-3).

Positive:

- Effective lecturers can communicate intrinsic interest in subject matter through enthusiasm.

- Lectures can present material not otherwise available to students.
- Lectures can present large amounts of information.
- Lectures can be presented to large audiences.
- Lectures appeal to those students who learn best by listening.

Negative:

- Lectures fail to provide instructors with feedback on the extent of student learning.
- In lectures, students are passive.
- Students' attention wanes in 15 to 20 minutes.
- Information is often forgotten quickly when students are passive.
- Lectures emphasize learning by listening, which is a disadvantage to students who learn best with other learning styles.

The current findings suggest that using technology in a large classroom environment, where lecturing typically occurs, can have a significant effect on reducing the limitations presented above. In fact, in the current study, it was found that on the cumulative exam scores, students receiving the dynamic dual treatment had a 14% improvement on exam achievements over students receiving course content through lectures alone.

From the viewpoint of the researcher, based on the results of the current and prior research conducted in large class environments, it is clear that adding technology to traditional instruction has a positive effect on student achievement and student attitudes above what would be found using traditional instruction alone. It is still unclear from this study as to whether this improvement is due to the added control on

the part of the student or because of the variety of opportunities to learn (McKeachie, 1980a). It is recommended that future research address this question.

In the current research, most participants were resident students attending the university full time. Given the positive results of providing instruction through the Internet, as was found in the current research, the offering of courses with flexible online instruction to students at a distance is a viable option. Today, the fastest growing group in the population of undergraduate students are those attempting to meet family, economic, and educational goals simultaneously—so this should be an important finding (U.S. Department of Education, 1999; Penney, 1997).

The findings in the current research support the assertions of Gilbert (2001) and McKeachie (1980a). Even though their assertions come two decades apart, they both call for educators to diversify their methods for instruction. When McKeachie (1980a) suggested that successful student achievement requires instructors to provide students with a variety of methods for learning, the Internet had not been invented. The Internet provides instructors the tools in providing students with multiple ways to interact with subject matter. In the new millennium, Gilbert (2001) espouses that the best educational options for undergraduate instruction come from "hybrids" that "combine different media, tools and pedagogies" (p.16). The findings of the current research support these claims.

In conclusion, using technology in the instruction of large classes provides a platform for students to actively access course materials on their terms while meeting their individual needs and goals. Furthermore, the increased learning opportunities outside of the face-to-face class meetings appear to have been a more important

indicator of success than having routine face-to-face instructor interaction. The common thread found among the four instructional treatment groups was that as learning opportunities increased outside of the face-to-face meetings student achievement increased.

Limitations of the Study

The findings of this research have several limitations. First, student achievement was compared among different samples of students who received only one instructional treatment. It would have strengthened the study if students had been provided multiple instructional treatments and their achievement measured across the treatments.

A second limitation of this research is that the findings reported here only considered student achievement as measured by structured multiple-choice questions. Obviously, it is important for undergraduate students to be able to demonstrate learning other than the regurgitation of facts and figures. This research falls short of providing insight into the effect of technology added to instruction when learning higher order thinking is of primary concern.

Third, the researcher attempted to control instructional factors, which may have an effect on student achievement and attitude in the current research. The research was conducted over a two-year period using the same instructer and it is likely that not all factors were considered. To the extent that there were other factors, which were not considered and controlled for in the current study, the results found for student achievement and attitudes toward the instruction is necessarily a limitation in this study.

Fourth, the researcher created the instruments used to collect data. Effort was made to ascertain the internal and external validity and reliability of the instruments through the Kuder-Richardson and Cronbach's alpha. With each instrument used, the resultant measurement for validity was acceptable but certainly could have been improved. It should be noted that the instruments used to collect data were not scrutinized with complete validity and reliability testing.

Finally, the data resulting from this study were obtained from students enrolled in one course over multiple semesters. The magnitude of the results would certainly be greater had the findings come from data collected across multiple courses. Obviously the results of this study, that is, that student achievement was improved by adding learning opportunities to the traditional instruction, may be more indicative of the instructor's ability to harness the power of Internet tools than merely the tools themselves. In other words, given another instructor, using the same tools, different results may have been achieved.

Future Research

The findings of the current study have provided some exciting revelations regarding the benefits of infusing technology into a large undergraduate classroom. Successful duplication of these finding will require additional research to continue to explore the reasons why and conditions when student achievement and attitudes are improved with the use of technology. Instructional materials found in courseware packages are readily available to instructors in higher education. The following is a short list of research questions that would build on the current findings.

- Are certain disciplines better suited for improving student learning through the use of technology?
- Do the content levels of a course make a difference in the effect that technology has on student learning?
- Can the findings of this study that student learning and attitudes improved with the addition of technology be duplicated across multiple disciplines?
- Can the addition of online discussions increase the positive student achievement found in the current study?
- Can researchers identify different types of learners that benefit from the addition of Internet teaching tools when added to the instructional method?

Future Practice

The findings in the current research suggest that significant improvement can be made with the addition of web-based technology in classroom instruction. Implementing these technologies into the classroom will continue to require considerable time on the part of the instructor. Current faculty incentives found in may institutions of higher education will need to be modified if the benefits found in this study are to be realized on a larger scale. Many contemporary evaluations of web-based instruction in higher education have focused on making the educational enterprise more cost effective.

It appears that too many proponents of funding for technology on America's campuses are forging ahead for the sole purpose of reducing the cost of educating students. Using Internet technologies in support of face-to-face classrooms is not likely to reduce the university's cost per student. However, significant improvements in student achievement and attitudes can be realized within the current range of funding provided at most institutions (McArthur & Lewis, 1998).

Quality courseware, which provides faculty the tools to harness the Internet in their instruction, is becoming increasingly more available at a reasonable cost per student. University administrators should do more to provide faculty access to these resources. Under current tenure-track conditions found at many research institutions, there is little incentive for faculty to impact student learning in their classrooms by using technology. Although the tools are rapidly becoming easier to use by faculty without in-depth programming skills, it continues to require an allocation of time that often is competing with faculty commitments to research and service.

Without a serious commitment to improving student achievement through the use of technology in the classroom, faculty will not redirect their time into these activities. Implementing these tools into the classroom is not difficult but must be done carefully and often without the luxury of reduced teaching loads.

It is hoped that the findings of this research will lead others to begin rethinking instructional practices by continuing to search for teaching methods that provide a broad range of opportunities for students to interact with course content. In the final analysis, it is not the technology that improves student learning or their attitudes toward

instruction but rather the variety of learning opportunities that provide different learners access to course content on their own terms.

Weigel (2000), a professor of ethics and economic development at Eastern College in Pennsylvania, recently argued that colleges and universities are facing some crucial tasks. First, they must reverse the trend of treating undergraduate instruction as a commodity by using large lecture classes taught by adjuncts. And secondly, increasing the value they offer students by developing hybrid models that combine the best features of the brick-and-mortar campus and e-learning (p. B8).

The results of the data collected in this study indicate that the use of technology has an effect on student learning and attitudes. The wave toward increasing the use of technology should continue to bring interest in future research on the effects of increasing technology while reducing face-to-face instruction on student outcomes and experience. Technological advances provide us with a new set of pedagogical tools that when used appropriately should increase the focus on the learner, increase the control of the learner, and increase the opportunities for the learner to access course content on their own terms. If realized, each of these positive outcomes will contribute significantly to improving student achievement and attitudes toward instruction.

APPENDIX A

COURSE SYLLABUS

HRTA 100 Introduction to the Hospitality Industry

Text: Walker, J. (1998). Introduction to Hospitality. New Jersey: Prentice Hall.
Study Guide: Walker, J. (1998). Introduction to Hospitality. New Jersey: Prentice Hall.

Instructor: Brian Miller, M.S.
Office: 03-D Flint Laboratory
Phone: 545-4053 E-mail: blm@hrta.umass.edu
Office Hours: Friday 11 – 2 p.m. or by appointment
Teaching Assistant: TBA
Course Web Page: http://unix-oit.umass.edu/~hrta100

Purpose:
HRTA 100 is designed to introduce the student to the broad world of Hospitality Management. This course will provide the student with information about the history of hospitality, travel and tourism resources, hotel room and food & beverage operations, restaurant development and operations, recreation & leisure activities, and the people who have shaped the industry. In short, this course is an overview of the dynamic world of the hospitality industry.

Objectives:

At the end of this semester students will be able to:

describe the advantages and disadvantages associated with careers in the hospitality industry.

list and explain the five broad segments of the hospitality industry.

describe the evolution of the hospitality industry.

understand the impact industry leaders have had on this vast industry.

appreciate the diversity and uniqueness of the hospitality industry.

locate and use hospitality and business resources to produce cogent written presentations.

Additional objectives are presented at the beginning of each textbook chapter.

How to succeed in HRTA 100:

The size of this course provides us with a unique challenge in creating an atmosphere of support for each other. It is important that members of the class select and foster academic relationships with fellow classmates. Attendance in this class is not mandatory but will be an effective way to ensure a passing grade. You have made a commitment to develop your skills through education and this course will offer many opportunities for you to improve your academic, social, and professional business skills. My office is always open in support of your education. The responsibility of your success in this

class will rest on you. Many opportunities will be provided throughout the semester for you to participate in the class. Please take advantage of these. Best of luck in your educational and professional endeavors.

Outline:

Information / Activity	***Chapter***
Orientation/ Overview	
Opportunities in the Hospitality Industry	
Hospitality Periodicals	Handouts – Reserve
The History of Hospitality	Chapter 1
Human Resources – Culture	Chapter 13 P. 417-435
Leadership/Management	Chapter 14 P. 437-462
Service	Notes
Exam 1	
Tourism	Chapter 2
Marketing	Chapter 13 P. 405-417
Recreation & Leisure	Chapter 10
Guest Speaker	
Guest Speaker	
The Gaming Industry	Chapter 11
Meetings and Conventions	Chapter 12
Exam 2	
Hotel Development	Chapter 3
Hotel Management Rooms	Chapter 4
Hotel Management – F&B	Chapter 5
Exam 3	
The Restaurant Business	Chapter 6
Restaurant Operations	Chapter 7
Manage Services	Chapter 8
Beverages	Chapter 9
Final Exam	

Grading:

A (>92), AB (87 – 91.99), B (82 – 86.99), BC (77 – 81.99), C (72 – 76.99), CD (67 – 71.99), D (60 – 66.99), F (<60)
The grading will be based on absolute scores not on a curve.

Evaluation:

Three Two-Page Papers (Typed double spaced)	300 points
Three One-Hour Examinations	300 points
Final Examination (Cumulative)	50 points
Ten Quizzes	100 points

Total Possible Points: **850 Points**

Course Format:

This class will be taught using a variety of instructional styles. Given the size of our class, a majority of the information will be presented through lecturing, slides, overheads, videos, and Internet exploration. In addition to presentations given by the instructor, various guests from the hospitality industry will be asked to talk to our class. I have attempted to schedule guest speakers during the relevant chapters that we will be exploring. Some adjustments to this syllabus may need to be made during the semester to meet our guests' busy professional demands. Each guest speaker will be asked to speak for approximately 30 minutes leaving us with about 15 minutes to ask questions. Your participation in these sessions will enhance the learning of all of us.

Three One-Hour Exams

Three exams will be given in class during the semester. These exams will be comprised of multiple-choice, true/false and short answer questions and will be worth 100 points each. These exams will take the entire class period.

Final Exam

We will be having a final exam during finals week. The exam will be cumulative and will be worth 150 points.

Quizzes

10 quizzes will be given in class during the course of the semester. The schedule of quizzes is located in this syllabus packet. Each quiz will contain 5 questions and will be worth 10 points. Make ups of missed quizzes will only be allowed for students that have a legitimate documented excuse as is described in the UMass Undergraduate Handbook. will be accepted.

APPENDIX B

PRETEST SURVEY

Welcome to HRTA 100. Please answer the following questions. The results of this exercise will allow me to determine the knowledge level that you are coming into this course. Please put your name and student number on the answer sheet. Make sure that you clearly bubble in the appropriate circles. Thank you for your time and consideration.

1. What is the meaning of sustainable tourism?

   a. tourism that can sustain the interests of the entire family.
   b. tourism that meets economic expectations and environmental requirements.
   c. tourism that is obtainable by a large population.
   d. tourism that keeps people busy.

2. Which of the following ways do hotel organizations attempt to limit the risks involved in their industry?

   a. Buy undeveloped land with President Clinton and his cronies.
   b. Franchise their hotels.
   c. Develop management contracts with other hotel investors.
   d. b and c.

3. As compared to commercial operations (e.g., a restaurant), managed services operations have the advantage of:

   a. focusing exclusively on pleasing the guest
   b. having busier weekends
   c. being able to predict the number of meals and portion sizes
   d. putting out all food for a lunch period at the same time

4. A significant **difference** between contemporary Innkeepers verses an Innkeeper during Ancient times is:

   a. nothing, they are about the same
   b. contemporary Innkeepers are not as respected and their Ancient counterparts
   c. contemporary Innkeepers are more respected than Ancient Innkeepers
   d. ancient Innkeepers were more respected than contemporary Innkeepers

5. Menu pricing strategies **should** take into consideration:

   a. the expected profit
   b. the contribution margin of the item
   c. nutritional awareness
   d. a and b, only

6. One reason that travel is expected to increase in the coming years is because:

a. people all over the world are losing their jobs.
b. people all over the world are living longer.
c. the standard of living throughout the world is decreasing.
d. travel is not expected to increase in the near future.

7. _____ is the modern trend where major lodging companies have properties in each segment of the market, such as luxury, mid-scale, and economy.

a. horizontal integration
b. cross-marketing
c. vertical integration
d. franchising

8. Money that flows out of the local economy to purchase outside resources is referred to as:

a. multiplier effect
b. leakage
c. chain reaction
d. concept of supply and demand

9. Which of these factors **does not** present a high degree of risk to the hotel industry?

a. cyclical nature of demand
b. high degree of capital investment
c. appreciation of property value
d. transitional periods of the economy

10. From the **franchisee perspective**, the main advantage of franchising includes:

a. upfront fees
b. centralized reservations
c. participation in volume discounts for purchasing furnishings, etc.
d. all of the above.
e. b and c, only

11. Of the following, which **is a good example** of the multiplier effect?

a. An even number times itself will always yield an even number.
b. A theme park buys a roller coaster made in Italy.
c. A tourist spends money in a restaurant, then the restaurateur pays wages to his staff, then the staff buy groceries at the local market.
d. None of these are examples of the multiplier effect.

12. Tourism pollution is used in reference to:

a. social-cultural problems created by mass tourism in developing countries
b. the economic impact of tourism on developing countries
c. the Americanization of a country's culture which is imposed on mass tourism
d. the disturbance of natural environments and cultures when exposed to mass tourism

13. Why is it useful to classify general characteristics of travelers with terms such as Psychocentrics and Allocentrics?

a. because people travel out of desire for recognition, attention, and appreciation.
b. it enables organizations to target services to a more defined population.
c. organizations can create services that better meet the demands of differing groups of travelers.
d. All of the above.

14. What do the four P's of the marketing mix stand for?

a. Product, price, place, and promotion.
b. Promotion, place, price, and pressure.
c. Place, pressure, price, and place.
d. Promotion, prevention, place, and pressure.

15. In establishing an effective purchasing system, one step is:

a. the whole process should be left in the hands of a computer
b. the chef should be the only person who places orders and receives the goods
c. a par stock level should be established
d. independent restaurant operators should use the formal system

16. What is a PMS in a lodging organization?

a. a preventative maintenance tool for hotel swimming pools.
b. a system of accounts established by the American Accounting Association.
c. an electronic computerized system that facilitates running a hotel.
d. this is not found in a hotel.

17. Which of the following **is a true** statement about gaming entertainment hotels?

a. Career opportunities within gaming entertainment hotels are similar to those in full service hotels.
b. Gaming entertainment hotels are generally smaller than non-gaming entertainment hotels.
c. Food and beverage is often franchised to a third party.
d. Rooms and guest service departments are generally available to staff after they have worked up through the gaming enterprise ranks.

18. The lack of a luxury-restaurant chain is explained by the fact(s):

a. the labor cost of a luxury restaurant is too high and it is difficult to maintain consistency.
b. there are not enough guests that can afford dining at such a restaurant.
c. marketing and purchasing for a cluster of restaurants is not profitable.

19. **Municipal**- parks, -playgrounds, -swimming pools, and -golf courses are:

a. government organized
b. non-government managed
c. non-profit
d. privately funded

20. The process of introduction, growth, maturity, and decline of a product is called:

a. product life-cycle
b. rotation
c. growth cycle
d. market-growth cycle

21. Which of the following are steps that casino entertainment operators have taken to address the problem of gambling?

a. funding of educational programs
b. staff training
c. determination of what forms of gaming are safe for problem gamblers
d. a and b, only

22. The difficulty in assessing the increased crime associated with new gaming operations is?

a. The increase is larger than our typical graph paper.
b. There is no increased crime associated with new gaming operations.
c. These figures do not take into account the increased number of visitors to the area.
d. There are no difficulties with assessing crime the facts show conclusively that gaming operations does increase crime.

23. The overall feel of a company and the way people relate to each other is called?

a. corporate culture
b. corporate mission statement
c. corporate philosophy
d. corporate objectives

24. In a hotel, the daily report is an important document because it provides:

a. provides the latest information for hotel managers make financial investments
b. provides details of the previous day's financial activities and vital information regarding the performance of the hotel
c. provides hotel guest local information concerning area weather, attractions, and houses of worship.

25. Forecasting, planning, motivating, and decision making are considered:

a. key management functions
b. means to achieve the objectives of a hotel
c. mission statement
d. part of the corporate philosophy

26. The competitiveness of the restaurant business may force restaurants to

a. reduce payroll expenses
b. create a single menu for both lunch and dinner
c. simplify menu terminology
d. all of the above

27. The computation of the occupancy of a hotel is what?

a. Room Sales divided by the total number of rooms.
b. Total rooms occupied divided by total rooms empty
c. Total rooms sold divided by the total of available rooms
d. The number of guest in the hotel divided by the number of total rooms.

28. How is the Average Daily Rate of a hotel calculated?

a. Total revenue generated by the hotel divided by the number of rooms sold.
b. Total number of rooms sold divided by the total revenue generated.
c. Total profit divided by the number of rooms sold.
d. Total revenue generated divided by the total number of rooms available.

29. The All Season Restaurant need to determine their Food Cost percentage, how would they do that?

a. Total food sales divided by food cost.
b. Total cost of food divided by the food sales.
c. Total restaurant sales divided by the food cost + food labor.
d. There is no such figure used called food cost percentage.

30. Branded quick-service chains are currently expanding their operations into elementary and secondary schools because

a. it significantly increases revenues
b. it is a good chance to increase brand loyalty
c. it is well accepted by parents
d. it provides good, nutritious meals

Part 2 Using Computers

31. How familiar are you with using computers?

a. quite a bit
b. some
c. none

32. Do you own your own computer?

a. yes **If yes, skip to question 34.**
b. no

33. Do you have easy access to using a computer?

a) yes
b) no

34. Do you have an email account?

a) Yes
b) No **If no, skip to question 36.**

35. How often to you access this account? _____ a) Daily
_____ b) Several times per week
_____ c) Weekly
_____ d) Less than Weekly
_____ e) Seldom

36. How much experience have you had using the Internet?

a. quite a bit
b. some
c. none

How comfortable are you with the following computer activities?

37. Email

a) quite a bit
b) some
c) none

38. Newsgroups

a) quite a bit
b) some
c) none

39. Internet searches

a) quite a bit
b) some
c) none

40. World Wide Web

a) quite a bit
b) some
c) none

41. Word Processing

a) quite a bit
b) some
c) none

42. Spreadsheet Applications

a) quite a bit
b) some
c) none

Please state how you feel about the following statements:

		Strongly disagree				Strongly Agree
43.	**Using Internet Technology is an important lifelong skill**	**1**	**2**	**3**	**4**	**5**
44.	**Computers are very intimidating**	**1**	**2**	**3**	**4**	**5**
45.	**The World Wide Web is a useful source for information.**	**1**	**2**	**3**	**4**	**5**
		Not Comfortable			**Very Comfortable**	
46.	**How comfortable do you feel about putting your thoughts in writing by handwriting?**	**1**	**2**	**\3**	**4**	**5**
47.	**How comfortable do you feel about putting your thoughts in writing by keyboarding?**	**1**	**2**	**3**	**4**	**5**
48.	**How comfortable do you feel about speaking in a small group discussion (25-30 students)?**	**1**	**2**	**3**	**4**	**5**

APPENDIX C

EXAM 1

Name: _____
Student Number: _____

Write you name and student number on both the exam sheet and the answer sheet. Please indicate the test color on your answer sheet. Please write clearly and make sure that you completely erase any changes on your answer sheet. Select the single best answer for each question. Good Luck.

1. Chef Auguste Escoffier is noted for the development of _____, which forever changed the organization of the commercial kitchen.
a. staggered work schedules
b. table d'hote menu
c. the brigade system
d. innovative cooking methods

2. Delmonico's restaurant was among the first restaurants to offer _____ menus to their guests.
a. American Plan
b. European Plan
c. a la carte
d. table d'hote
e. bilingual

3. A combination of stables, sleeping accommodations and fortresses, originating in Persia were called:
a. Khans
b. Chinese postal system
c. Roman postal system
d. way-side inns

4. Which of the following was not a purpose of coffee houses?
a. being a social gathering place
b. acting as a means to sober up the population
c. serving as a place to drink alcoholic beverages
d. providing a location for political discussions

5. The word "restaurants" originally referred to
a. M. Boulanger
b. soups
c. taverns that served food
d. the first French restaurant

6. In ancient Rome, inns were
a. often run by retired gladiators
b. used for slumming and drinking
c. unsanitary and carried a bad reputation
d. all of the above

7. Tavern owners during the ancient Greek and Roman periods were often regarded as:
a. fine upstanding operators
b. crooks and were sympathetic to criminals
c. there were no taverns during this time period
d. ran by slave owners

8. Medieval times were characterized by:
a. a vast culinary experience
b. a proliferation of restaurants that catered to Royal Guests
c. the most exciting time period for the growth of the hospitality industry
d. poor sanitary standard in public kitchens

9. Cesar Ritz, Delmonico's and Haute Cuisine were all the rage during which time period?

a. Nineteenth Century
b. Twentieth Century
c. Medieval Times
d. these historical occurrences occurred over several centuries

10. Newspapers, magazines, and journals are:
a. scholarly publications
b. reviews
c. periodicals
d. trade publications

11. Nation's Restaurant News, *Hotel and Motel Management* and *Hospitality Law* are examples of:
a. trade journals
b. scholarly journals
c. CD-ROM Databa*ses*
d. magazines

12. The first mention of hospitality is found in
a. China
b. Europe
c. Ancient Persia
d. Medieval Europe

13. Three anticipated outcomes or goals of using technology in hospitality organizations are?
a. increased profits, greater stability, and improved customer satisfaction
b. greater worker efficiency, improved quality, and improved customer service
c. increased costs, improved worker satisfaction, and improved quality
d. increased efficiency, increased worker satisfaction, and improved customer service

14. Improving service through the use of technology will often result in?
a. provides very little benefit and will at best be accepted by a very small portion of the marketplace
b. greater employee satisfaction with their organization
c. increase stress for the organization's workforce
d. reduce hassle and improved satisfaction for the customer

15. Generally, hospitality organizations that wish to be a leader in the adapting technology will often focus on which type of consumers?
a. Laggards
b. late majority
c. innovators
d. early adopters

16. Guest room systems typically include which of the following guest services?
a. Card locking and energy control systems
b. Call accounting and in-room dining
c. Express check-out, voice mail, and on demand movies
d. Guest maintenance requests and long-term stay options

17. Why are energy management systems important for lodging operators?
a. it provides an expert system for the efficient use of their energy resources.
b. It allows operators to provide better comfort for their guests.
c. These systems help reduce costly replacement of equipment through a systematic tracking of routine maintenance schedules.
d. All of the above.

18. Restaurant Management Systems typically include which of the following components?
a. energy management systems
b. point of sale systems
c. customer tracking systems
d. b and c

19. What are some of the benefits of a customer tracking systems for restaurants?
a. improved customer loyalty
b. improved knowledge of customer base
c. improved marketing efforts toward a narrowly defined market
d. all of the above

20. When should a college student begin writing a resume?
a. during their last semester of college, so that they can begin to interview with companies
b. during the early stages of the academic career so that opportunities can be identified during their college years
c. if possible work hard to insure that you never have to write a resume
d. what planet is this instructor from, no one writes resumes in today's employment market
e. none of the above

21. A good strategy during your college experience for improving the likelihood of a good job after college is?
a. maintain a reasonable GPA, take on leadership roles in organizations, and obtain work experience with increased responsibility.
b. get to know your professors and make sure that you shower them with gifts
c. maintain a 4-point GPA and keep to yourself.
d. It's all a crap shoot

22. Two good strategies to use when looking for a job after college are?
a. determine acceptable income requirements and stock value of the company
b. know the names of the leading figures in the organization and the amount of vacation day provided during the first year of employment
c. conduct in-depth research of the prospective company and determine your income requirements
d. provide as many employers as possible a copy of your resume and always wear your best suit

23. If you were looking for a sales position with unlimited growth potential which of the following areas might provide you with this opportunity?
a. Server in a restaurant
b. Front office manager in a hotel
c. A sales representative for a distributor of food, beverages, or other goods required by the hospitality industry.
d. There are no jobs in the hospitality industry that would meet these criteria.

24. Product view of service focuses on what?
a. the individual tasks of the service
b. empowering employees to provide service
c. concentrates on what the guest wants
d. b and c

25. Why is service difficult to manage and evaluate?
a. often the product is the experience of the customer
b. generally there is no way to recall the defected product
c. employees are interacting with customers without direct supervision
d. all of the above are reasons as to why service is difficult to manage and evaluate

26. When thinking about providing service as a process one would:
a. emphasize service as a task
b. concentrate on what the service provider does
c. focus efforts to quantify the cost involved in providing the serve
d. empower employees to satisfy guest's need and solve guest's problems

27. I check into a hotel and in my room I have a fully stocked refrigerator that automatically charges my account when I remove a product. This is an example of which type of service transaction?
a. face to face transaction
b. electronic- mechanical transaction
c. indirect personal transaction

28. Because service is an experience that happens to the guest:
a. it is easy to monitor and evaluate
b. there is no ability to recall the service when defects in service occur
c. many guest will take advantage of the service provider
d. it is easy for everyone to have the same standards for service

29. Which of the following is NOT a characteristic of service in the hospitality industry?
a. guest and employee are part of the transaction
b. it is impossible to inventory most of the products
c. service quality is easy to maintain and evaluate
d. production and consumption are often simultaneous

30. If you wanted to find out more information about labor issues in the hospitality, which of the following would probably be your best strategy for starting your search?
a. Go to an Internet search site and enter "labor issues in the hospitality industry".
b. Ask the reference librarian at the Umass Library.
c. Find the Index to Lodging and Restaurant Index and search for labor issues.
d. Search the online catalogue at the university and search for subject.

31. Two components commonly found in Restaurant Management systems are?
a. POS and menu analysis
b. Energy Management and call accounting
c. Career Planning and POS
d. Card Keys and menu analysis

32. Which of the following is a trade journal related to hospitality management
a. Journal of Hospitality Education
b. Nations Restaurant News
c. Chronicle of Higher Education
d. USA Today

33. The earliest reference to hospitality is found in:
a. the Code of Hammurabi
b. the Old Testament
c. the play *The Frogs*
d. the New Testament

34. The Romans built and maintained a road system primarily to:
a. ease domestic travel
b. encourage centers of commerce in suburban areas
c. support military and commercial purposes
d. keep unemployment low

35. In the Middle Ages:
a. innkeeping thrived
b. innkeeping faltered
c. the government took a more active role in regulating the innkeeping business
d. international trade was on the rise

36. The first images used in hospitality advertising were:
a. foliage, such as vines around a pole, a bush or some leaves
b. a family coat of arms
c. a stage coach
d. road

37. Why were inns built with a center courtyard?
a. to save on construction materials
b. the design was energy efficient
c. historically they had always been designed with a courtyard
d. the amphitheater-like setting enabled guests to watch stage coaches arrive and depart

38. The first restaurant chain in the United States:
a. was the result of the expansion of the railroads
b. was a result of an increase in population and ease of travel
c. both a and b
d. neither a nor b

39. The idea of resort hotels had its origins in:
a. the Renaissance, as an outgrowth of the interest in culture and nature
b. second century Rome
c. 17th century America, when the new Americans discovered some of the Indian communities and hotsprings
d. 19th century America, with the discovery of natural sights and the founding of the Homestead in Hot Springs, Virginia

40. The decade of the 1920s is often called "the golden age of hotels" because:
a. numerous hotels opened in rural areas
b. many luxury hotels were built
c. powerful railroad companies exerted control over hotel building
d. hotels recorded high occupancy percentages

41. Fundamentally, the business of hospitality exists because:
a. a traveler away from home has need for certain services
b. there are many hotels and restaurants in the world
c. airlines are one of the most popular ways to travel
d. travel agencies employ a significant number of people in the United States

42. Which of the following is a distinguishing feature of the hospitality business?
a. hotels are in operation 12 hours a day, seven days a week
b. there are peaks and valleys in the demand for travel related services
c. labor costs are reasonable
d. there is little risk involved in opening a hotel or restaurant

43. Why are frequent guest programs important?
a. the hospitality business needs to have a lot of guests
b. it is nice for a business to have guests return
c. it is more cost-effective for a business to generate repeat guests than new ones
d. hotel staff like to know their guests

44. A frequent guest program:
a. tracks repeat customers and offers rewards
b. helps track the number of people in a hotel lobby
c. calculates the number of turns in a restaurant
d. all of the above

45. Which of the following jobs would you expect to find in a lodging product
a. housekeeping manager
b. human resource director
c. general manager
d. all of the above

46. "Absolutely Positively Overnight" is an example of:
a. an impossible service objective
b. a service guarantee
c. a mission statement
d. a service process

47. If you were interested in a job with a restaurant company, which of the following information would be most important to know for consideration of employment?
a. Sales volume, days off, and if I was allowed to visit during off-duty times.
b. Is the organization franchised, corporate or independently operated
c. The number of employees hired, salary, and days off.
d. Expected bonus, average time to get to GM, and days off.

48. Which of the following is a scholarly journal containing hospitality related articles?
a. Journal of International Hospitality Research
b. Restaurant News
c. Hotels
d. Bon Appetit

49. Why is a loyal customer so valuable?
a. the longer a company keeps a customer, the more profit it stands to make
b. with loyal customers, a company can cut back on advertising
c. loyal customers mean loyal employees
d. loyal customers make frequent trips

50. Research shows that loyal customers:
a. spend more over time
b. will pay more over time
c. provide new sources of business
d. all of the above
e. none of the above

APPENDIX D

EXAM 2

Name: _____

Student Number: _____

Write your name and student number on both the exam sheet and the answer sheet. Please indicate the test color on your answer sheet. Please write clearly on essay questions and make sure that you completely erase any changes on your answer sheet. Select the single best answer for each question. Good Luck.

1. From the franchisor perspective, advantages of franchising includes
a. Upfront fees
b. Centralized reservations
c. Participation in volume discounts for purchasing furnishings, etc.
d. a and b only

2. When considering an applicant for a position, the interviewer specifically evaluates the applicant's
a. attentiveness
b. attitudes
c. skills and abilities
d. all of the above

3. It is best to ask only close-ended questions when interviewing candidates.
a. True
b. False

4. The recent behavior syndrome common to performance appraisal sessions is:
a. emphasizes certain aspects of the job.
b. Recent behavior influences the evaluation rating not overall job performance.
c. Is the tendency to like people we have recently met that are similar to us.
d.

5. Which of the following are essential characteristics of a leader?
a. knowledge, endurance, education
b. dependability, risk-taking, daring
c. initiative, decisiveness, dependability
d. judgment, loyalty, selfishness

6. The process by which a leader is able to bring about certain actions from others through means of reward is called
a. rewarding leadership
b. transactional leadership
c. transformational leadership
d. transactional model

7. Forecasting, planning, motivating, and decision making are considered
a. key management functions
b. means to achieve the objectives of a hotel
c. mission statement
d. part of the corporate philosophy

8. The process of arranging resources of a company so that all activities contribute to a set goal is called:
a. organization
b. formal organization
c. informal organization
d. decision making
e. empowerment

9. The overall feel of a company and the way people relate to each other is called
a. corporate culture
b. corporate mission statement
c. corporate philosophy
d. corporate objective

10. _____ is the process by which a person is able to influence the actions and outcomes of others.
a. Management
b. Organization
c. Leadership
d. Consulting

11. _____ is the formal process by which organizational objectives are achieved through efforts of subordinates.
a. Leadership
b. Managing
c. Communicating
d. empowerment

12. Communicating is:
a. process of arranging resources of the organization so that activities efficiently contribute to the organization's goals.
b. the art or process of initiating or sustaining behavior toward established goals.
c. accuracy is very important because in the hospitality industry goods and services are perishable; used to predict the level of business volume.
d. may be formal or informal; serves as "the oil that lubricates" all other management functions.

13. Which of the following best describes the term corporate culture.
a. corporate cultures are only felt in governmental organizations.
b. it is the overall style of the company and governs how people relate to one another and their jobs.
c. it is an atmosphere defined by the cultural differences of its employees.
d. none of these describes the term corporate culture.

14. Attendance at an _____ session is usually required for all new employees.
a. company picnic
b. orientation
c. exit interview
d. executive committee meeting

15. In 1995, restrictions on commissions earned by travel agents spurred new growth in the travel agency business.
a. True
b. False

16. From the **franchisee perspective**, the main advantage of franchising includes:
a. up-front fees
b. centralized reservations
c. participation in volume discounts for purchasing furnishings, etc.
d. b and c, only

17. Tourism can be defined as
a. individuals traveling for pleasure or business
b. the idea of attracting and accommodating visitors
c. the entire world industry of travel, hotels, transportation, and promotion
d. all of the above

18. When tourism is simplified into categories, suppliers, regulators, marketers and consumer organizations belong to which factor?
a. geographical
b. motive
c. function
d. industry

19. Among the reasons many cruise ships sail under foreign flags is because
a. US ships are not permitted to operate casino-type gambling
b. construction costs are cheaper in most foreign shipyards which are not government subsidized
c. US assets by maritime unions are too low
d. all of the above

20. The purpose of the Airline Deregulation Act was
a. to allow a free market competition
b. to protect less competitive airlines by regulating fare structures and rates
c. to protect domestic airlines from international competitors
d. to allow a free market of competition among domestic airlines

21. Money that flows out of the local economy to purchase outside resources is referred to as
a. multiplier effect
b. leakage
c. chain reaction
d. concept of supply and demand

22. Acting as a travel counselor, selling on behalf of airlines, cruise lines, hotels and car rentals, and arranging accommodations are duties of the
a. travel and tour wholesaler
b. travel agent
c. corporate travel manager
d. destination management company

23. Tourism pollution is used in reference to
a. social-cultural problems created by mass tourism in developing countries
b. the economic impact of tourism on developing countries
c. the Americanization of a country's culture which is imposed on mass tourism
d. the disturbance of natural environments and cultures when exposed to mass tourism

24. Adventure tourism is most closely connected to
a. allocentrics
b. cultural preservation
c. eco-tourism
d. psychocentrics

25. Psychocentrics
a. travel out of desire for recognition, attention, and appreciation
b. prefer familiar travel destination
c. travel out of desire to learn more about new cultures
d. prefer new and different destinations

26. For many developing nations, _____ represents one of the only sources of income and a way to balance out trade with other nations.
a. manufacturing
b. construction
c. oil exploration
d. tourism

27. Business travel accounts to approximately half of all US travel.
a. True
b. False

28. Mass tourism has proven to be destructive for some destinations.
a. True
b. False

29. Responsible development of new destinations must consider the long-term impact of tourism on the environment and population.
a. True
b. False

30. Which of the following is not a benefit offered by associations
a. political voice
b. member services
c. education
d. financial support

31. Why would Hyatt actively seek franchisees?
a. to find better properties
b. to expand without investing capital
c. to find better managers
d. to secure new franchises before other competitors

32. Which of the following is a risk or disadvantage to franchisor?
a. the difficulty in finding good franchises
b. the franchisee might not renew the agreement
c. the complexities of managing independent franchisees
d. all of the above

33. Which of the following components define tourism?
a. transportation services
b. lodging and food service
c. entertainment
d. all of the above

34. Transportation is an important component of hospitality because:
a. the impact that transportation has had on hospitality establishments
b. there are many airlines in operation today
c. the highway system has seen many improvements over the years
d. there are many hotels located near large interstate highways

35. Travel services is the piece of the hospitality business that:
a. facilitates arrangements for travelers
b. works for the airline industry
c. is owned by large credit card companies
d. has developed inroads for international hotel development

36. Travel agencies book:
a. about 75% of all hotel rooms in the United States
b. about 25% of all hotel rooms in the United States
c. about 50% of all hotel rooms in the United States
d. nearly all hotel rooms in the United States

37. Travel agencies:
a. are an important intermediary in the hospitality business, linking the traveler to the hospitality business
b. work for the hospitality business to sell services to travelers
c. book services with only specific hospitality providers
d. serve domestic customers

38. Travel agencies:
a. are an important intermediary in the hospitality business, linking the traveler to the hospitality business
b. work for the hospitality business to sell services to travelers
c. book services with only specific hospitality providers
d. serve domestic customers

39. Indonesia has seen dramatic growth in its hospitality industry due to:
a. changing weather patterns
b. significant assistance from the government
c. an increase in the number of airlines serving the area
d. a decrease in labor costs

40. The top 20 international travel destinations represent nearly:
a. 75% of the world's total international travel
b. 65% of the world's total domestic travel
c. 75% of the world's total domestic travel
d. 45% of the world's total international travel

41. If Country A has 10,000 available hotel rooms and 150,000 annual international visitors, the ratio of arrivals to rooms is:
a. 5
b. 15
c. 10
d. 150

42. Which of the following is a significant problem for hotels in developing countries?
a. labor shortages
b. lack of advertisers
c. lack of tourists
d. lack of sufficiently trained staff

43. The number one concern of hoteliers facing the 21st century, according to the International Hotel Association, is:
a. application of technology
b. global competition
c. security and safety
d. effective marketing and advertising

44. The number one concern of hoteliers facing the 21st century, according to the International Hotel Association, is:
a. application of technology
b. global competition
c. security and safety
d. effective marketing and advertising

45. According to the National Tourism Resources Review Commission, a tourist can best be considered:
a. a person who travels at least 50 miles for pleasure and stays overnight
b. a person who travels at least 25 miles regardless of purpose or length of trip
c. a person who travels at least 100 miles and stays overnight or returns the same day
d. a person who travels for pleasure and stays overnight regardless of distance traveled

46. The multiple facets of tourism include:
a. travel distribution channels, food service and lodging
b. food service, lodging, entertainment, transportation and travel distribution channels
c. food service, travel agencies and lodging
d. local, state, national and international organizations

47. From a sociological perspective, tourism includes:
a. leisure activities and the habits of travelers
b. methods people use for travel
c. the history of lodging and food service
d. the opinion of society toward travelers

48. From an economic perspective, tourism includes:
a. foreign exchange
b. foreign exchange and capital expenditures
c. capital expenditures and employment payrolls
d. foreign exchange and employment payrolls
e. foreign exchange, tax receipts, capital expenditures and employment payrolls

49. An arrival is a person who:
a. enters a country with the intention of leaving within a specified time frame
b. enters a country
c. returns to a home country after a trip of specified length
d. enters a country that tracks tourism

50. Worldwide which of the following is true?
a. 1 out of 2 jobs are in the tourism industry
b. 1 out of 6 jobs are in the tourism industry
c. 1 out of 9 jobs are in the tourism industry
d. 1 out of 3 jobs are in the tourism industry

APPENDIX E

EXAM 3

Name: _____

Student Number: _____

Write your name and student number on both the exam sheet and the answer sheet. Please indicate the test color on your answer sheet. Please make sure that you completely erase any changes on your answer sheet. Select the single best answer for each question. Good Luck.

1. Military Clubs are recreation facilities and are not typically viewed as part of the club management field.
a. true
b. false

2. These parks create the atmosphere of another place and time.
a. zoological parks
b. theme parks
c. national parks
d. therapeutic spas

3. Recreation offered to the public with an incentive of making a profit is _____.
a. profit motivation
b. cash recreational activities
c. commercial recreation
d. fee-based recreation

4. Recreation-based tourism activities would only be appropriate for two states located in New England.
a. true
b. false

5. Why has technology had a major impact on the popularity of a number of recreational activities within the last decade?
a. design of equipment has made it easier for novices to play
b. materials used in production of equipment have come down in price
c. transportation options to reach recreational facilities have increased due to technological advances
d. all of the above

6. The term handle refers to:
a. the cost of security on the casino floor
b. the amount won by players
c. the total amount wagered
d. the cost of casino overhead

7. Social gamblers are identified as those customers who:
a. are interested only in the thrill of risk associated with gambling
b. play games of risk for entertainment
c. enjoy other forms of entertainment offered in addition to games of chance
d. b and c

8. Non-gaming revenues may come from which of the following sources?
a. hotel rooms
b. high-tech shows
c. retail shops
d. all of the above

9. Atlantic City encouraged the development of casino gaming for all of the following reasons **except**:
a. increasing employment
b. redeveloping a depressed urban area
c. to keep Native American tribes from opening casinos in New Jersey
d. to increase tax revenue for funding social programs

10. Pathological gambling affects what segments of a person's life?
a. work life
b. family life
c. personal life
d. all of the above

11. Which of the following are steps that casino entertainment operators have taken to address the problem of gambling?
a. funding of educational programs
b. staff training
c. consumer awareness programs
d. all of the above

12. "Comps" refers to:
a. complimentary gifts like food, wine, and lodging
b. competitive bettors at a table
c. computer generated printouts of customers
d. comprehensive insurance for losses at the blackjack table

13. Native American casinos are required by law to make payments to the state for the privilege of operating.
a. True
b. False

14. Which of the following is **not** a characteristic of the hospitality industry that makes it difficult to market?
a. product is perishable
b. tangible goods
c. customer is part of the product
d. ease of duplication of products among competitors

15. Which of the following are (is) trend(s) in conventions, meetings, and expositions?
a. Expected to continue to grow
b. The cloning of shows
c. Increased competition as communities look to conventions as a stimulus for economic growth
d. All of the above

16. Casino entertainment is one of the most highly regulated businesses in the US.
a. True
b. False

17. The process of determining the number of female business travelers fulfills the objective of determining the:
a. target market
b. market assessment
c. market demand
d. market gap

18. The process of introduction, growth, maturity, and decline of a product is called the:
a. product life-cycle
b. rotation
c. growth cycle
d. market-growth cycle

19. Which of the following is not part of the marketing mix?
a. place
b. price
c. production
d. product

20. When considering the product in the marketing mix which of following is the most appropriate consideration?
a. are we using a bottom-up approach
b. does it suit the demands/needs of target market
c. is it suitable for the market
d. is it a push/pull strategy

21. Where did gaming entertainment first evolved?
a. on Native American tribal lands
b. on riverboats
c. in Las Vegas
d. in Atlantic City

22. Which of the following is not a true statement about gaming entertainment hotels?
a. Career opportunities within gaming entertainment hotels are similar to those in full service hotels.
b. Gaming entertainment hotels are generally smaller than non-gaming entertainment hotels.
c. Food and beverage is often a separate division from the hotel division.
d. Rooms and guest service departments offer great opportunity to advancement.

23. Equity based clubs are defined as:
a. Clubs where members are part owners of the club
b. Clubs where they have borrowed money to build facilities.
c. Clubs where members pay a fee and have no ownership interest in the club
d. All of the above

24. A catering manager must be particularly skilled in
a. setting service standards
b. dealing with ethnic groups
c. being creative
d. all of the above

25. Hotel security includes---
a. Record keeping
b. Lighting
c. Alarm Systems
d. All of the above

26. Yield management is a process that seeks to maximize both earnings and occupancy.
a. True
b. False

27. Which of these factors does **NOT** present a high degree of risk to the hotel industry?
a. cyclical nature of demand
b. high degree of capital investment
c. appreciation of property value
d. perishability of inventory

28. The American Automobile Association classifies hotels by
a. Five Diamond Awards
b. Five Star Awards
c. Rating in hotel catalogue
d. Luxury, mid-scale, economy

29. The Front Office maintains balanced guests accounts with the aid of
a. PMS systems
b. POS terminals
c. In-room check out
d. All of the above

30. The process of introduction, growth, maturity, and decline of a product is called
a. product life-cycle
b. rotation
c. growth cycle
d. market-growth cycle

31. Which of the following is generally **true** about yield management?
a. It is not concerned with the fluctuations in demand
b. It originated in the hotel industry
c. The shorter the reservation's notice, the higher the price of the room
d. It involves suggestive selling

32. The first motel was
a. opened in California
b. designed so guests could drive up to the doors of their rooms
c. designed as rest points after a long drive
d. all of the above

33. S.W.O.T. stands for what?
a. Stars Wars over Turkey.
b. Singapore welcomes you with Open Thanks.
c. Strength, weaknesses, opportunities, and threats.
d. Strong, weak, openness, and treasures.

34. Which of the following is true about the Front Office?
a. It is the only department in charge of room sales
b. It provides the guest with the first impression of the whole hotel
c. It is not responsible for maintaining balanced guest accounts
d. It is not responsible for achieving the optimum ADR

35. Which of the following is an essential characteristic of a successful General Manager?
a. A participating leadership style
b. Paying attention to details
c. Being sufficiently available to meet guests personally
d. All of the above

36. Hotel restaurants present the manager with some challenges because
a. guests generally prefer room service
b. guests tend to be unpredictable
c. the hotel restaurant's food is not as good as outside restaurants
d. the menus are limited

37. The daily report is an important document because it provides
a. the hotel's key operating ratios
b. the room occupancy percentage
c. the hotel's revenue
d. all of the above

38. A hotel's accounts are generally balanced
a. at the beginning of each day, between 4 and 6 am.
b. at the end of the day, at about 1 am.
c. constantly, through PMS systems
d. by the Front Office Manager

39. The chef responsible for the day-to-day running of each shift is the
a. executive sous chef
b. chef tournant
c. sous chef
d. chef de partie

40. What do the four P's stand for?
a. Product, price, place, and promotion.
b. Promotion, place, price, and pressure.
c. Place, pressure, price, and place.
d. Promotion, prevention, place, and pressure.

41. The difference between Catering and Banquets is that Catering is involved with the:
a. Business end of the enterprise.
b. Services and Operations.
c. Maintenance of the facility.
d. Sales end of the enterprise.

42. The profile of a society in a given area is called
a. demographics
b. social analysis
c. environmental analysis
d. social and political survey

43. A good way to prompt hotel guests to dine at the hotel's restaurant is by
a. offering advantageous coupons
b. showing guests the restaurant and explaining the cuisine before they go to their rooms
c. having cooking demonstrations in the lobby
d. all of the above

44. REV/PAR is used to compare individual property performance to competitors.
a. True
b. False

45. Real Estate Investment Trusts (REITs) purchase real estate in an effort to generate profits for their stockholders.
a. True
b. False

46. Yield management is a process that seeks to maximize both earnings and occupancy.
a. True
b. False

47. A guaranteed reservation always requires that the guest pay for his or her full stay at the hotel in advance.

a. True
b. False

48. The purpose of recreation is to:

a. enhance well-being
b. create a sense of harmony
c. relieve stress and provide social interaction
d. all of the above

49. The National Park Service was founded in 1916 to:

a. conserve park resources and to provide for their use by the public
b. generate income prior the onset of the great depression
c. protect large tracks of land for logging operations
d. because of the persistence of President Roosevelt

50. Credit Cards are welcomed at hotels because

a. they speed up payments to the hotel
b. they help maintain a sufficient amount of cash flow
c. they help the hotel keep accounts receivable to the desired maximum number of days.
d. all of the above.

APPENDIX F

EXAM 4

Name _____

Student Number _____

Please put your name and student number on your answer key. Also, remember to put the color of your exam on your answer key. Select the best answer for each question. Good Luck and enjoy your holiday and winter break.

1. What is the meaning of sustainable tourism?
a. tourism that can sustain the interests of the entire family.
b. tourism that meets economic expectations and environmental requirements.
c. tourism that is obtainable by a large population.
d. tourism that keeps people busy.

2. Which of the following ways do hotel organizations attempt to limit the risks involved in their industry?
a. Buy undeveloped land with President Clinton and his cronies.
b. Franchise their hotels.
c. Develop management contracts with other hotel investors.
d. b and c.

3. As compared to commercial operations (e.g., a restaurant), managed services operations have the advantage of:
a. focusing exclusively on pleasing the guest
b. having busier weekends
c. being able to predict the number of meals and portion sizes
d. putting out all food for a lunch period at the same time

4. A significant **difference** between contemporary Innkeepers verses an Innkeeper during Ancient times is:
a. nothing, they are about the same
b. contemporary Innkeepers are not as respected as their Ancient counterparts
c. contemporary Innkeepers are more respected than Ancient Innkeepers
d. contemporary Innkeepers are common people and Ancient Innkeepers were from the Nobility

5. Menu pricing strategies **should** take into consideration:
a. the expected profit
b. the contribution margin of the item
c. nutritional awareness
d. a and b, only

6. One reason that travel is expected to increase in the coming years is because:
a. people all over the world are losing their jobs.
b. people all over the world are living longer.
c. the standard of living throughout the world is decreasing.
d. travel is not expected to increase in the near future.

7. _____ is the modern trend where major lodging companies have properties in each segment of the market, such as luxury, mid-scale, and economy.

a. horizontal integration
b. cross-marketing
c. vertical integration
d. franchising

8. Money that flows out of the local economy to purchase outside resources is referred to as:

a. multiplier effect
b. leakage
c. chain reaction
d. cash

9. Which of these factors **does not** present a high degree of risk to the hotel industry?

a. cyclical nature of demand
b. high degree of capital investment
c. appreciation of property value
d. transitional periods of the economy

10. From the **franchisee perspective**, the main advantage of franchising includes:

a. upfront fees
b. centralized reservations
c. participation in volume discounts for purchasing furnishings, etc.
d. all of the above.
e. b and c, only

11. Of the following, which **is a good example** of the multiplier effect?

a. An even number times itself will always yield an even number.
b. A theme park buys a roller coaster made in Italy.
c. A tourist spends money in a restaurant, then the restaurateur pays wages to his staff, then the staff buy groceries at the local market.
d. None of these are examples of the multiplier effect.

12. Tourism pollution is used in reference to:

a. social-cultural problems created by mass tourism in developing countries
b. the economic impact of tourism on developing countries
c. the Americanization of a country's culture which is imposed on mass tourism
d. the disturbance of natural environments and cultures when exposed to mass tourism

13. Why is it useful to classify general characteristics of travelers with terms such as Psychocentrics and Allocentrics?

a. because people travel out of desire for recognition, attention, and appreciation.
b. it enables organizations to target services to a more defined population.
c. organizations can create services that better meet the demands of differing groups of travelers.
d. All of the above.

14. What do the four P's of the marketing mix stand for?
a. Product, price, place, and promotion.
b. Promotion, place, price, and pressure.
c. Place, pressure, price, and place.
d. Promotion, prevention, place, and pressure.

15. In establishing an effective purchasing system, one step is:
a. the whole process should be left in the hands of a computer
b. the chef should be the only person who places orders and receives the goods
c. a par stock level should be established
d. independent restaurant operators should use the formal system

16. What is a PMS in a lodging organization?
a. a preventative maintenance tool for hotel swimming pools.
b. a system of accounts established by the American Accounting Association.
c. an electronic computerized system that facilitates running a hotel.
d. this is not found in a hotel.

17. Which of the following **is a true** statement about gaming entertainment hotels?
a. Career opportunities within gaming entertainment hotels are similar to those in full service hotels.
b. Gaming entertainment hotels are generally smaller than non-gaming entertainment hotels.
c. Food and beverage is often franchised to a third party.
d. Rooms and guest service departments are generally available to staff after they have worked up through the gaming enterprise ranks.

18. The lack of a luxury-restaurant chain is explained by the fact(s):
a. the labor cost of a luxury restaurant is too high and it is difficult to maintain consistency.
b. most restaurateurs do not have the money to develop these type of restaurants.
c. marketing and purchasing for a cluster of restaurants is not profitable.
d. Most cities/ communities cannot afford a luxury restaurant.

19. Municipal- parks, -playgrounds, -swimming pools, and -golf courses are:
a. government organized
b. non-government managed
c. non-profit
d. privately funded

20. The process of introduction, growth, maturity, and decline of a product is called:
a. product life-cycle
b. rotation
c. growth cycle
d. market-growth cycle

21. Which of the following are steps that casino entertainment operators have taken to address the problem of gambling?
a. funding of educational programs
b. staff training
c. determination of what forms of gaming are safe for problem gamblers
d. a and b, only

22. The difficulty in assessing the increased crime associated with new gaming operations is?
a. The increase is larger than our typical graph paper.
b. There is no increased crime associated with new gaming operations.
c. Often these figures do not take into account the increased number of visitors to the area.
d. There are no difficulties with assessing crime the facts show conclusively that gaming operations does increase crime.

23. The overall feel of a company and the way people relate to each other is called?
a. corporate culture
b. corporate mission statement
c. corporate philosophy
d. corporate objectives

24. In a hotel, the daily report is an important document because it provides:
a. the latest information for hotel managers making financial investments
b. details of the previous day's financial activities and vital information regarding the performance of the hotel
c. hotel guest local information concerning area weather, attractions, and houses of worship.

25. Forecasting, planning, motivating, and decision making are considered:
a. key management functions
b. means to achieve the objectives of a hotel
c. mission statement
d. part of the corporate philosophy

26. The competitiveness of the restaurant business may force restaurants to
a. reduce payroll expenses
b. create a single menu for both lunch and dinner
c. simplify menu terminology
d. all of the above

27. The computation of the occupancy percentage of a hotel is what?
a. Room Sales divided by the total number of rooms.
b. Total rooms occupied divided by total rooms empty
c. Total rooms sold divided by the total of available rooms
d. The number of guest in the hotel divided by the number of total rooms.

28. How is the Average Daily Rate of a hotel calculated?
a. Total rooms revenue generated by the hotel divided by the number of rooms sold.
b. Total number of rooms sold divided by the total revenue generated.
c. Total profit divided by the number of rooms sold.
d. Total revenue generated divided by the total number of rooms available.

29. If the All Season Restaurant needed to determine their Food Cost percentage, how would they do that?
a. Total food sales divided by food cost.
b. Total cost of food divided by the food sales.
c. Total restaurant sales divided by the food cost + food labor.
d. There is no such figure used called food cost percentage.

30. Branded quick-service chains are currently expanding their operations into elementary and secondary schools because
a. It significantly reduces revenue
b. it is a good chance to increase brand loyalty
c. it is well accepted by parents
d. it provides good, nutritious meals

31. Which of the following figures would be found on an income statement?
a. Accounts Receivable
b. Contribution Margin
c. Office Supplies Expense
d. Office Equipment

32. The purpose of recreation is to:
a. enhance well-being
b. create a sense of harmony
c. relieve stress and provide social interaction
d. all of the above

33. The historical development of tourism took place in which order?
a. railway, aircraft, automobile, cruise ship
b. railway, automobile, aircraft, cruise ship
c. automobile, railway, cruise ship, aircraft
d. automobile, railway, aircraft, cruise ship

34. Hilton, Hyatt, Four Seasons are examples of _____ hotels.
a. economy lodging properties
b. franchise leaders
c. all-suite organizations
d. full-service hotel organizations

35. World Tourism Organizations:
a. lends money for tourism development
b. most widely recognized tourism organization in the world
c. coordinates the development of all civil aviation
d. global organization that regulates most international airlines

36. A successful corporate philosophy would usually include:
a. an outline of the responsibilities of a business
b. a commitment to principles ahead of profits
c. commitment to equality, fairness, and ethics
d. all of the above

37. A good way to prompt hotel guests to dine at the hotel's restaurant is by?
a. Offering advantageous coupons
b. Showing hotel guests the restaurant and explaining the cuisine before they go to their rooms
c. Having cooking demonstrations in the lobby
d. All of the above

38. The purpose of national parks is to:
a. be opened for public use
b. protect endangered plants and species
c. preserve the ecosystem
d. all of the above

39. Generally, operations with a lower pour cost it is because of what factor?
a. Low control systems
b. Low volume-catering operations
c. Have very honest employees
d. More sophisticated control systems

40. S.W.O.T. stands for what?
a. Stars Wars over Turkey.
b. Singapore welcomes you with Open Thanks.
c. Strengths, weaknesses, opportunities, and threats.
d. Strong, weak, openness, and treasures.

41. Which of the following **is not** a controllable expense?
a. Public Relations
b. Heat
c. Repairs
d. Rent

42. Which of the following innovations provide us the ability to consume and enjoy foods out of season?
a. canning and vacuum packaging
b. air combustion engine
c. Internet
d. Steamship liners

43. Contribution margin is defined as:
a. the ratio between food cost and total sales
b. the dollar differential between the cost and sales price of a menu item
c. the difference between net income and total sales
d. the difference between food sales and beverage sales dollars

44. The word hospitality comes from which French word?
a. hospital
b. hostels
c. hospitable
d. hospice

45. Yield management helps hotels to balance demand and supply to:
a. cheat the consumer.
b. reduce business.
c. minimize revenues
d. maximize revenues

46. World Bank:
a. lends money for tourism development
b. most widely recognized tourism organization in the world
c. coordinates the development of civil aviation
d. global organization that regulates most international airlines

47. Restaurant forecasting involves two main components:
a. fixed and variable costs
b. labor cost percentage and food cost percentage
c. guest covers and average guest check
d. none of the above

48. With the increasing mobility in the 1950s, most hotels became:
a. small and wholly owned
b. independently operated businesses
c. partnerships and franchised businesses
d. focused on providing specialized services

49. Adventure tourism is most closely connected to:
a. allocentrics
b. mid-centrics
c. psychocentrics
d. eco-syntrics

50. Which of the following is a controllable expense?
a. rent
b. state taxes
c. income taxes
d. payroll

51. Which of the following **is a reason** for people to go to restaurants?
a. to celebrate graduation
b. to build a relationship
c. to experience a different culture
d. all of these are reasons to go to restaurants

52. The purpose of the production sheet is to ensure enough food is prepared to meet anticipated demand.
a. True
b. False

53. Which of the following **best describes** Airport Hotels?
a. caters primarily to business, professionals, and relocating families.
b. averages 200 - 600 rooms and caters to business travelers, and high occupancy rates because of its location.
c. have large rooms and usually include a lounge and kitchenette.
d. were developed extensively during the turn of the 20th century.

54. Which of the following are essential characteristics of a leader?
a. knowledge, endurance, education
b. dependability, risk-taking, daring
c. initiative, decisiveness, dependability
d. judgment, loyalty, selfishness

55. The term "Leakage" refers to the predictable decline of tourism.
a. True
b. False

56. Perpetual inventories are an important tool in preventing bar theft.
a. True
b. False

57. Bartenders can be held personally responsible for serving patrons too much alcohol.
a. True
b. False

58. In restaurants it is important that front of the house managers do not get involved with the back of the house.
a. True
b. False

59. Responsible development of new destinations must consider the long-term impact of tourism on the environment and population.
a. True
b. False

60. Management philosophy and operating methods largely determine the extent and success of inventory and cash control in food service operations.
a. True
b. False

61. Mass tourism has proven to be destructive for some destinations.
a. True
b. False

62. Generally speaking, higher profit percentages are earned on the sale of food items than on alcoholic beverages.
a. True
b. False

63. "Spotters" are employed by bar management to watch bartender conduct.
a. True
b. False

64. Casino entertainment is one of the most tightly regulated businesses in the US.
a. True
b. False

65. The formula for calculating a hotel's RevPar is Room Revenue/Rooms Available.
a. True
b. False

66. REV/PAR is used to compare individual property performance to competitors.
a. True
b. False

67. Mother's Day is the most popular day for dining out.
a. True
b. False

68. Psychocentrics prefer familiar travel destinations, whereas allocentrics prefer new and different destinations.
a. True
b. False

69. Dram Shop Laws require bar owners to be held responsible for the service of alcohol to patrons.
a. True
b. False

70. Publicity is an element of promotion that can not be controlled by the company.
a. True
b. False

71. Requiring bartenders to work on Sunday is an example of a bar owner complying with Dram Shop Laws.
a. True
b. False

72. Knowing customers and their needs increases an organizations ability to satisfy customers needs.
a. True
b. False

73. _____ is the process by which a person is able to influence the actions and outcomes of others.
a. management
b. leadership
c. entrepreneur
d. restaurateur

74. _____ is the formal process by which organizational objectives are achieved through efforts of subordinates.
a. managing
b. leadership
c. entrepreneur
d. restaurateur

75. Two methods used to increase the average daily rate for a lodging property are?
a. Supply and demand
b. Raising rates and reducing rooms
c. Up-selling and yield management
d. None of the above

76. _____ is the practice of defrauding a bar or restaurant, by employees.
a. upselling
b. customer service
c. pilferage
d. leveraged money

Use the following statistics from this Marriott Resort for the month of October to answer the following 13 questions.

Marriott Harbourside

Rooms Division	
Rooms	900
Rooms Occupied	725
Rooms Revenue	$ 110,000
Average Rack Rate	$ 235
F & B Division	
Food Revenue	$ 311,100
Beverage Revenue	$ 98,050
Total Revenue	$ 409,150

Food Statistics	
Beginning Inventory	$ 48,000
Purchases	$ 94,000
Ending Inventory	$ 33,900
Food Payroll	$ 59,875
Covers	11,630
Beverage Statistics	
Beginning Inventory	$ 16,050
Purchases	$ 21,000
Ending Inventory	$ 12,300
Beverage Payroll	$ 16,450

77. What is this hotel's occupancy percentage?
    a. 76.2%
    b. 80.56%
    c. 85.1%
    d. 72.6%

78. What is the Average Daily Rate?
    a. $ 123.55
    b. $ 195.50
    c. $ 151.73
    d. $ 160.62

79. What is the RevPar for the Marriott Harborside Resort?
    a. $ 122.22
    b. $ 168.87
    c. $ 100.75
    d. $ 137.69

80. What is the "Average Check" for this hotel's f&b during the month?
    a. $ 26.75
    b. $ 28.10
    c. $ 18.75
    d. $ 21.10

81. What is the Percentage of Potential Rooms Revenue?
    a. 74%
    b. 68%
    c. 79%
    d. 65%

82. What is the food cost?
    a. $ 74,500
    c. $ 98,100
    c. b$ 108,100
    d. $ 93,700

83. What is the Food Cost percentage?
    a. 31.9%
    b. 39.0%
    c. 22.3%
    d. 34.8%

84. What is the beverage cost?
    a. $ 22,100
    b. $ 20,875
    c. $ 24,750
    d. $ 28,900

85. What is the beverage cost percentage?
    a. 21.7%
    b. 19.8%
    c. 15.6%
    d. 5.2%

86. What is the labor cost percentage for food?
    a. 11.9%
    b. 18.8%
    c. 23.4%
    d. 19.2%

87. What is the labor cost percentage for beverage?
    a. 19.0%
    b. 16.7%
    c. 17.1%
    d. 14.7%

88. Compared to the industry average for hotel food cost percentage, is this hotel's food cost percentage:
    a. lower than the average
    b. higher than the average
    c. comparable to the average
    d. none of the above

89. Compare to the industry average for hotel beverage cost percentage, is this hotel's beverage cost percentage:
    a. lower than the average
    b. higher than the average
    c. comparable to the average
    d. none of the above

90. The control process in a restaurant involves, among other things
    a. delegating the ordering and the receiving to two different people
    b. storing and issuing
    c. trash disposal
    d. all of the above

91. The computation of the average guest check involves
    a. total sales minus food cost
    b. total sales divided by guest count
    c. the difference between the cost of a menu item and its sales price
    d. cost of goods sold divided by total sales

92. High priced premium brands of liquor should be placed in high visibility areas of the bar station.
    a. True
    b. False

93. If a menu item is popular, it has a high contribution margin.
    a. True
    b. False

94. Because of the high turnover rate of kitchen staff, managers should not waste time training employees to do more than one job (cross training).
    a. True
    b. False

95. The _____ indicates the amount of each item that should be kept in stock.
    a. safe level
    b. control level
    c. par stock level
    d. inventory control

96. Horizontal integration refers to:
    a. lodging companies that compete in various market segments
    b. a natural progression in which a tourism organization in one sector operates a complementary business in another related tourism sector.
    c. a hospitality organization that also operates a financial organization.
    d. a hospitality organization that is traded on one of the major stock indexes.

97. Annual conventions must be held in the same city every year.
    a. true
    b. false

98. RevPar is calculated by dividing room revenue by the number of hotel rooms sold.
    a. true
    b. false

99. SMERF refers to:
    a. cartoon characters
    b. an acronym of categories of groups which are marketed to by hotels to fill in gaps when business is slow.
    c. These groups as a general rule spend less than other categories of associations.
    d. None of the above.

100. Contractors represent approximately 45% of the Business and Industry Managed Services sector.
    a. true
    b. false

APPENDIX G

"FACE-TO-FACE" COURSE EVALUATION

Name: _____

Student Number: _____

The following questions ask about your beliefs and the success that you have had in this course. Use the rating scale between "1" and "5" to respond to the statements.

	Strongly disagree				Strongly agree
Taking this course in a large class was a helpful way to learn more about the hospitality industry.	1	2	3	4	5
After taking this course, I am interested in a hospitality career.	1	2	3	4	5
I really enjoyed learning about the hospitality industry.	1	2	3	4	5
Please rate the following:	Not at All				A Great Deal
Overall, how valuable was this course for you?	1	2	3	4	5
How much have you learned about the hospitality industry through this course?	1	2	3	4	5
How much effort did you put into this course?	1	2	3	4	5
	Very Easy				Very Difficult
Overall, how do you view the level of course content?	1	2	3	4	5
	Too Slow				Too Fast
Overall, how suitable was the pace of the course?	1	2	3	4	5
	Too Little				Too Much
How much work did this course require?	1	2	3	4	5
How useful were the following resources used in the course?					
	Not at All Useful				Very Useful
Text	1	2	3	4	5
Workbook/study guide – (Homework)	1	2	3	4	5
Instructor's presentations in class	1	2	3	4	5
Returned work in Resource Center	1	2	3	4	5
In-class Quizzes	1	2	3	4	5
PowerPoint presentations on website	1	2	3	4	5
Guest Speakers	1	2	3	4	5
Hard copies of notes, etc., in Resource Center	1	2	3	4	5

Throughout my college career, my pattern in attending class lectures has been to:

_____ attend every class lecture

_____ miss class only 1 or 2 times/semester

_____ skip class 1/month

_____ only attend for exams

On average how much time each week did you spend doing the following – (in hours)

Reading the text _____ hours per week

Working on assignments _____ hours per week

Preparing for exams _____hours per week

On average, how many hours per week did you spend working on this course? _____

What did you like best about this course?

What about this course needs change or improvement?

What suggestions can you offer that would have made this course a better learning experience for you?

Any additional comments?

Would you recommend this course to other students and friends?
Yes
No

Thank you for your time and careful consideration in answering these questions. Your responses will help me to improve the course to better meet the needs of future students.

APPENDIX H

"HYBRID" COURSE EVALUATION

Name: _____

Student Number: _____

The following questions ask about your beliefs and the success that you have had in this course. Use the rating scale between "1" and "5" to respond to the statements.

	Strongly disagree				Strongly agree
Taking this course in a large class with a course website was a helpful way to learn more about the hospitality industry.	1	2	3	4	5
After taking this course I am interested in a hospitality career.	1	2	3	4	5
I really enjoyed learning about the hospitality industry.	1	2	3	4	5
Please rate the following:	Not at All				A Great Deal
Overall, how valuable was this course for you?	1	2	3	4	5
How much have you learned about the hospitality industry through this course?	1	2	3	4	5
How much effort did you put into this course?	1	2	3	4	5
	Very Easy				Very Difficult
Overall, how do you view the level of course content?	1	2	3	4	5
	Too Slow				Too Fast
Overall, how suitable was the pace of the course?	1	2	3	4	5
	Too Little				Too Much
How much work did this course require?	1	2	3	4	5
	Not at All Useful				Very Useful
How useful was the course website:					
a. in stimulating interest in course content?	1	2	3	4	5
b. in increasing understanding of concepts?	1	2	3	4	5
c. in overall usefulness?	1	2	3	4	5
How useful were the following resources used in the course?					
Text	1	2	3	4	5
Workbook/Study guide – (homework)	1	2	3	4	5
Instructor's presentations in class	1	2	3	4	5

Course notes on Website	1	2	3	4	5
Instructor's Study Guides	1	2	3	4	5
Returned work in Resource Center	1	2	3	4	5
Quizzes	1	2	3	4	5
PowerPoint presentations on website	1	2	3	4	5
Guest speakers	1	2	3	4	5
Grades posted on the website	1	2	3	4	5
Course Calendar with updates	1	2	3	4	5
Hard copies of notes, etc., in Resource Center	1	2	3	4	5

Throughout my college career, my pattern in attending class lectures has been to:

_____ attend every class lecture

_____ miss class only 1 or 2 times/semester

_____ skip class 1/month

_____ only attend for exams

On average how much time each week did you spend doing the following – (in hours)

Reading the text _____ hours per week

Working on assignments _____ hours per week

Preparing for exams _____hours per week

On average, how many hours per week did you spend working on this course? _____

What did you like best about this course?

What about this course needs change or improvement?

What suggestions can you offer that would have made this course a better learning experience for you?

Any additional comments?

Would you recommend this course to other students and friends?
Yes
No

Thank you for your time and careful consideration in answering these questions. Your responses will help me to improve the course to better meet the needs of future students.

APPENDIX I

ONLINE COURSE EVALUATION

Name: _____

Student Number: _____

The following questions ask about your beliefs and the success that you have had in this course. Use the rating scale between "1" and "5" to respond to the statements.

	Strongly disagree			Strongly agree	
Taking this course online was a helpful way to learn more about the hospitality industry.	1	2	3	4	5
After taking this course I am interested in a hospitality career.	1	2	3	4	5
I really enjoyed learning about the hospitality industry.	1	2	3	4	5
Please rate the following:	Not at All			A Great Deal	
Overall, how valuable was this course for you?	1	2	3	4	5
How much have you learned about the hospitality industry through this course?	1	2	3	4	5
How much effort did you put into this course?	1	2	3	4	5
	Very Easy			Very Difficult	
Overall, how do you view the level of course content?	1	2	3	4	5
	Too Slow			Too Fast	
Overall, how suitable was the pace of the course?	1	2	3	4	5
	Too Little			Too Much	
How much work did this course require?	1	2	3	4	5
	Not at All Useful			Very Useful	
How useful was the course website:					
a. in stimulating interest in course content?	1	2	3	4	5
b. in increasing understanding of concepts?	1	2	3	4	5
c. in overall usefulness?	1	2	3	4	5
How useful were the following resources used in the course?					
Text	1	2	3	4	5
Workbook/Study guide – (homework)	1	2	3	4	5
Course notes on Website	1	2	3	4	5

Instructor's Study Guides	1	2	3	4	5
Quizzes	1	2	3	4	5
PowerPoint presentations on website	1	2	3	4	5
Guest speakers	1	2	3	4	5
Grades posted on the website	1	2	3	4	5
Course Calendar with updates	1	2	3	4	5
Hard copies of notes, etc., in Resource Center	1	2	3	4	5

Throughout my college career, my pattern in attending class lectures has been to:

_____ attend every class lecture
_____ miss class only 1 or 2 times/semester
_____ skip class 1/month
_____ only attend for exams

On average how much time each week did you spend doing the following – (in hours)

Reading the text _____ hours per week

Working on assignments _____ hours per week

Preparing for exams _____hours per week

On average, how many hours per week did you spend working on this course? _____

What did you like best about this course?

What about this course needs change or improvement?

What suggestions can you offer that would have made this course a better learning experience for you?

Any additional comments?

Would you recommend taking this course online to other students and friends?
Yes
No

Thank you for your time and careful consideration in answering these questions. Your responses will help me to improve the course to better meet the needs of future students.

APPENDIX J

COURSE EVALUATION – UNIVERSITY OF MASSACHUSETTS

1. The instructor was well prepared for class.
   a. Almost always
   b. Frequently
   c. Sometimes
   d. Rarely
   e. Almost never

2. The instructor explained the course material clearly.
   a. Almost always
   b. Frequently
   c. Sometimes
   d. Rarely
   e. Almost never

3. The instructor cleared up points of confusion for you.
   f. Almost always
   g. Frequently
   h. Sometimes
   i. Rarely
   j. Almost never

4. The instructor uses class time well.
   a. Almost always
   b. Frequently
   c. Sometimes
   d. Rarely
   e. Almost never

5. The instructor inspired interest in the subject matter of this course.
   a. Almost always
   b. Frequently
   c. Sometimes
   d. Rarely
   e. Almost never

6. The instructor showed a personal interest in helping you learn.
   a. Almost always
   b. Frequently
   c. Sometimes
   d. Rarely
   e. Almost never

7. The instructor provided useful feedback on your performance.
   a. Almost always
   b. Frequently
   c. Sometimes
   d. Rarely
   e. Almost never

8. The methods of evaluating your work were fair.
   a. Almost always
   b. Frequently
   c. Sometimes
   d. Rarely
   e. Almost never

9. The instructor stimulated useful class participation.
   a. Almost always
   b. Frequently
   c. Sometimes
   d. Rarely
   e. Almost never

10. Overall, how much do you feel you have learned in this course?
   a. Much more than most courses
   b. More than most classes
   c. About the same as others
   d. Less than most courses
   e. Much less than most courses

11. What is the overall rating of this instructor's teaching?
   a. Almost always effective
   b. Usually effective
   c. Sometimes effective
   d. Rarely effective
   e. Almost never effective

12. What is your overall rating of this course?
   a. One of the best
   b. Better than average
   c. About average
   d. Worse than average
   e. One of the worst

BIBLIOGRAPHY

Althaus, S. (1998). Computer-mediated communication in the university classroom: An experiment with online discussions. Communication Education, 44(7), 158-174.

Andriole, S. J. (1995, October 9). Asynchronous education and training networks: Lessons learned well and in progress, [Online], Accessed March 16, 2000. Available: http://www.sloan.org/education/aln95.htm.

Aronson, R. J. (1987). Six keys to effective instruction in large classes: Advice from a practitioner. In Weimer, M.G. (Ed.)., Teaching large classes well (pp. 31-37). San Francisco: Jossey-Bass..

Astin, A. (1884). Achieving educational excellence: A critical assessment of priorities and practices in higher education. San Francisco: Jossey Bass.

Atherton, C.R. (1972). Lecture, discussion & independent study instructional methods revisited. The Journal of Experiential Education, 40(1), 24-28.

Baker, S.J. (1996). Access and attitudes regarding use of online services among socioculturally diverse college students. Dissertation Abstracts International, 57-03A, p. 1103.

Bauer, H., & Snizek, W. (1989). Encouraging students in large classes to ask questions: Some promising results from classes in chemistry and sociology. Teaching Sociology 17(3), 337-340.

Blocher, M. (1997). Self-regulation of strategies and motivation to enhance interaction and social presence in computer-mediated communication. Dissertation Abstracts International, 58-03A, p. 0823.

Bloom, B.S. (Ed.). (1956). Taxonomy of educational objectives: Volume 1: Cognitive domain. New York: McKay.

Bowden, J., & Marton, F. (1998). The university of learning. London: Kogan Pate Limited.

Brooks, R.P. (1987). Giving students feedback. In Weimer, M.G. (Ed.)., Teaching large classes well (pp. 39-44). San Francisco: Jossey-Bass.

Brubacher, J.S., & Rudy, W. (1997). Higher education in transition: A history of American colleges and universities. (4th ed.). New Brunswick: Transaction Publishers.

Carbone, E. (1998). Teaching large classes: Tools and strategies. Thousand Oaks, CA: Sage Publishing.

Carr, S. (January 26, 2000). Lehigh university program brings distance ed to accepted high-school seniors. The Chronicle of Higher Education. [Online]. Accessed February 16, 200. Available: http://chronicle.com/free/2000/01/2000012601u.htm.

Carnevale, D. (January 21, 2000a). Master plan in Washington state calls for more online instruction. The Chronicle of Higher Education. [Online]. Accessed February 16, 2000. Available: http://chronicle.com/free/2000/01/2000012101u.htm.

Carnevale, D. (May 19, 200b). 2 models for collaboration in distance education. The Chronicle of Higher Education. [Online]. Accessed June 12, 2000. Available: http://chronicle.com/free/v46/i37/37a05301.htm.

Cashin, W.E. (1985). Improving lectures: Idea paper no. 14. Manhattan, KS: Kansas State University, Center for Faculty Evaluation and Development.

Cheng, H., Lehman, J., & Armstrong, P. (1991). Comparison of performance and attitude in traditional and computer conferencing classes. The American Journal of Distance Education 5(3), 51-64.

Clark, R.E. (1983). Reconsidering research on learning from media. Review of Educational Research, 53(4), 445-459.

Clarke, D. (1999). Getting results with distance education. The American Journal of Distance Education, 12(1), 38-51.

Davis, B.G. (1993). Tools for teaching. San Francisco: Jossey-Bass Publishers.

Day, T.M. (1996). The effects of World Wide Web instruction and traditional motivation and learning styles in achievement and changes in attitudes in a technical writing agricommunications course. Masters Abstracts International, 35-02, p. 0389.

Dede, C. (1996) Distance learning-distributed learning: Making the transformation. Learning and Leading With Technology: The ISTE Journal of Educational Technology Practice and Policy, 23(7), 25-30.

Dede, C. (Summer, 1997). Distributed learning: How new technologies promise a richer educational experience. Connections: The New England Board of Higher Education, 12-16.

Doherty, P.B. (October, 1998). Learner control in asynchronous learning environments. ALN Magazine, 2(2). [Online]. Accessed March 22, 2000. Available: http://www.aln.org/alnweb/magazine/vol2_issue2/dohery.htm.

Dutton, J., Dutton, M., & Perry, J. (1999). Do online students perform as well as traditional students? Submitted for publication North Carolina State University.

Edgar, R. (1995). PC is to Piaget as WWW is to Vygotsky. Delivered at SIGGRAPH '95, Los Angeles. [Online]. Accessed July 5, 2000. Available: http://www.iconceptual.com/siggraph.html.

Egan, M.W., Welch, M., Page, B., & Sebastian, J. (1992). Learners' perceptions of instructional delivery systems: Conventional and television. The American Journal of Distance Education, 6(2), 47-55.

Enochs, J.R. (1994). The relationship of learning style, reading vocabulary, reading comprehension, and aptitude for learning to achievement: Self-paced and computer-assisted instructional modes. Meridian, CA: Naval Technical Training Center. ED250550

Feldhusen, J.R. (1963). The effect of small and large group instruction on learning the subject matter, attitudes, and interest. Journal of Psychology, 55(1), 357-362.

Freberg, L. (2000). Integrating Internet resources into the higher education classroom. Syllabus, 13(7), 48-50.

Fuhrmann, B.S., & Grasha, A.F. (1994). The past, present, and future in college teaching: Where does your teaching fit? In Feldman, K.A., & Paulsen, M.B. (Eds.)., Teaching and learning in the college classroom (pp. 139-155). Needham, MA: Ginn Press.

Gagné, E.D. (1985). The cognitive psychology of school learning. Boston: Little Brown.

Gaud, W.S. (November/December, 1999). Assessing the impact of web courses. Syllabus Magazine, 49-50. [Online]. Accessed October 13, 2000. Available: http://www.syllabus.com.

Geske, G.B. (1991). Challenges of teaching in large undergraduate classrooms. College Teaching, 44(3), 322-331.

Gilbert, S.W. (2001). The hybrids are in bloom. Syllabus: New Dimensions in Education Technology,14(6), 16.

Gleason, M. (1986). Better communication in large courses. College Teaching, 34(1), 20-24.

Gubernick, L., & Ebeling, A. (1997). I got my degree through e-mail. Forbes, 159, 84-92.

Hall, J. (1996). The educational paradigm shift: Implications for ICDE and the distance learning community. Open Praxis, (2), 27-36.

Hamilton, R., & Ghatala, E. (1994). Learning and instruction. New York: McGraw-Hill, Inc.

Hammond, R. J. (1997, August). A comparison of the learning experience of telecourse students in community and day sections. A paper presented at the Distance Learning Symposium Utah Valley State College, UT.

Harasim, L., Hiltz, S.R., Teles, L., & Turoff, M. (1995). Learning Networks: A field guide to teaching and learning online. Cambridge, MA: The MIT Press.

Hiltz, S.R., & Wellman, B. (1997). Asynchronous learning networks as a virtual classroom. Communications of the ACM, 40(9), 44-49.

Holmberg, B. (1989). Theory and practice of distance education. London: Routledge.

Hooper, S. & Hannafin, M.J. (1991). The effects of group composition on achievement, interaction, and learning efficiency during computer-based cooperative instruction. Educational Technology Research and Development, 39(3), 27-40.

Howell, D.C. (1999). Statistical methods for psychology. (4th ed.). Albany, NY: Duxbury Press.

Jonassen, D.H. (1995). Supporting communities of learners with technology: A vision for integrating technology with learning in schools. Educational Technology, 35(4), 60-63.

Juge, F., Hartman, J., Sorg, S., & Truman, B. (1997). Asynchronous learning networks for distributed learning. In Proceedings for the International Conference RUFIS '97: Role of Universities in the Future Information Society, 29-41.

Kinzie, M., Sullivan, H., & Berdel, R. (1988). Learner control and achievement in science computer-assisted instruction. Journal of Educational Psychology 80(3), 299-303.

Kubala, T. (1998). Teaching on the Internet: Visions. The Journal of Applied Research for the Florida Association of Community Colleges, 2(1), 44-46.

Lefrancois, G. (1988) . Psychology for teaching(6th ed.). Belmont, CA: Wadsworth Publishing Co.

Levin, H. M. (1988). Cost-effectiveness and educational policy. Educational Evaluation and Policy Analysis, 10, 51-69.

Levin, J. A., & Thurston, C. (1996). Research summary: Educational electronic networks. Educational Leadership, 54(3), 46-50.

Lowman, J. (1987). Giving students feedback. In Weimer, M.G. (Ed.), Teaching large classes well (pp. 71-83). San Francisco: Jossey-Bass.

Lynton, E.A., & Elman, S.E. (1987). New priorities for the university: Meeting society's needs for applied knowledge and competent individuals. San Francisco: Jossey-Bass Publishers.

Marsh, L.C., & Wells, K.L. (1996). Key aspects of a computerized statistics course. Journal of Computing in Higher Education, 8(2), 72-93.

Martin, E.E., & Rainey, L. (1993). Student achievement and attitude in a satellite-delivered high school science course. The American Journal of Distance Education, 7(1), 54-61.

Maxwell, N.L., & Lopus, J.S. (1995). A cost effectiveness analysis of large and small classes in the university. Educational Evaluation and Policy Analysis, 17(2), 167-178.

Mayadas, F. (1997). Asynchronous learning networks: A Sloan foundation perspective. Journal of Asynchronous Learning Networks, 1(1), 1-14.

McArthur, D.J., & Lewis, M.W. (1998). Untangling the Web: Applications of the Internet and other information technologies to higher learning. Washington, DC: Rand

McIssac, M.S., & Blocher, J.M. (March, 1998). How research in distance education can affect practice. Educational Media International, 25(1), 43-47.

McKeachie, W.J. (1969). Teaching tips: A guidebook for the beginning college teacher. Lexington, MA: D.C. Heath and Company.

McKeachie, W.J. (1980a). Class size, large classes, and multiple sections. Academe, 66, 24-27.

McKeachie, W.J. (Ed.) (1980b). Learning, cognition, and college teaching. New Directions for Teaching and Learning, No.2. San Francisco: Jossey-Bass.

Miller, B.& Cohen, N. (2001). Success in large class versus online instruction: Age makes a difference. Unpublished manuscript.

Morrissey, C.A. (1998). The impact of the Internet on management education: What the research shows. [Online]. Accessed April 7, 2000. Available: http://horizon.unc.edu/TS/cases/1998-06.asp.

Navarro, P., & Shoemaker, J. (1999). The power of cyber learning: An empirical test. Journal of Computing in Higher Education, 11(1), 29-54.

Newman, D., Griffin, P., & Cole, M. (1989). The construction zone: Working for cognitive change in school. Cambridge: Cambridge University Press.

Newman, S.E. (1957). Student vs. instructor design of study method. Journal of Educational Psychology, 48, 328-333.

Odin, J.K. (1997). ALN: Pedagogical assumptions, instructional strategies, and software solutions. [Online]. Accessed February 22. 2000.Available: http://www2.hawaii.edu/aln/aln_tex.htm

Penney, S.H. (1997, Spring). New England's workforce future has arrived. The New England Board of Higher Education, 28-29.

Phillips, D.C., & Soltis, J. (1998). Perspectives on learning. New York: Teachers College Press.

Phipps, R., & Merisotis, J. (1999, April). What's the difference: A review of contemporary research on the effectiveness of distance learning in higher education. The Institute of Higher Education Policy.

Plant, J.C. (1997). Instructional uses of computer-based communications in selected university environments. Dissertation Abstracts International, 58-09A, p. 3484.

Pintrich, P.R., Smith, D.A., Garcia, T, & McKeachie, W.J. (1992). A manual for the use of the Motivated Strategies for Learning Questionnaire. Ann Arbor: The University of Michigan. Grant Number OERI-86-0010.

Porter, T.L. (1997). Level of use of the Internet by Ohio State University. Dissertation Abstracts International, 58-05A, p. 1484.

Price, R.V. (1999). Designing a college Web-based course using a modified personalized system of instruction (PSI) model. TechTrends, 43(5), 23-28.

Richardson, S.M. (2000). Civility: What went wrong? Thriving in Academe, 17(5), 5-7.

Rogers, C. (1969). Freedom to learn. Columbus, OH: Charles E. Merrill.

Rosenberg, M.J. (1995, October 9). Reengineering education and training: The strategic role of technology. March 31, 2000. [Online]. Accessed December 11, 2000. Available: http://www.sloan.org/education/aln95.htm

Rudolph, F. (1962). The American college and university: A history. New York: Alfred A Knopf.

Russell, T.L. (1999). The no significant difference phenomenon. Chapel Hill: Office of Instructional Telecommunications, North Carolina State University.

Russell, T.L. (2000). The no significant difference phenomenon. [Online], Accessed January 31, 2000. Available: http://cuda.teleeducation.nb.ca/significantdifference/index.cfm.

Ruzic, R. (2000). New solutions, new barriers: Current uses of the Web in higher education. [Online]. Accessed February 15, 2001. Available: http://www.cast.org/presentation/rruzic/AERA2000.html

Schlosser, C.A., & Anderson, M.L. (1994). Distance education: Review of the literature. Washington, DC: Association for Educational Communications and Technology.

Schutte, J.G. (1997). Virtual teaching in higher education. Northridge, CA: The California State University-Northridge [Online]. Accessed January 7, 2000. Available: www.csun.edu/sociology/virexp.htm.

Slavin, R. (1990). Class size and student achievement: Is smaller better? Contemporary Education, 62(1), 6-12.

SPSS Base 9.0: Applications Guide. (1999). Chicago: SPSS Inc.

Souder, W.E. (1993). The effectiveness of traditional vs. satellite delivery in three management of technology master's degree programs. The American Journal of Distance Education,7(1), 37-53.

Student response to instruction. (1997). Amherst, MA: Office of Academic Planning and Assessment, University of Massachusetts.

Sun, C.T., & Chou, C (1996). Experiencing CORAL: Design and implementation of distant cooperative learning. IEEE Transactions on Education, 39(3), 357-366.

Townley. R.M. (1997). Students' and instructors' perceptions of Internet education in the community college. Dissertation Abstracts International, 58-06A. p. 2016.

Trinkle, D. A. (1999, August 6). Distance Education: A means to an end, no more, no less. The Chronicle of Higher Education , A60.

U.S. Department of Education. (1997). Distance education in higher education institutions. (NCES 98-062). Washington, DC: Office of Educational Research and Improvement.

U.S. Department of Education. (1999). Survey on distance education at postsecondary education institutions, 1998-1999. Washington, DC: National Center for Educational Statistics.

Wertsch, J.V. (1985). Vygotsky and the social formation of mind. Cambridge, MA: Harvard University Press.

Weaver, R.L., & Cotrell, H.W. (1987). Lecturing: Essential communication strategies. In Weimer, M.G. (Ed.), Teaching Large Classes Well (pp. 57-69). San Francisco: Jossey-Bass.

Weigel, V.B. (May 19, 2000). Free degrees? They're only a matter of time. Chronicle of Higher Education, B8.

Wulff, D.H., Nyquist, J.D., & Abbott, R.D. (1987). Students' perceptions of large classes. In Weimer, M.G. (Ed.), Teaching Large Classes Well (pp. 17-30). San Francisco: Jossey-Bass.

Wydra, F. T. (1980). Learner controlled instruction. Englewood Cliffs, NJ: Educational Technology Publications.